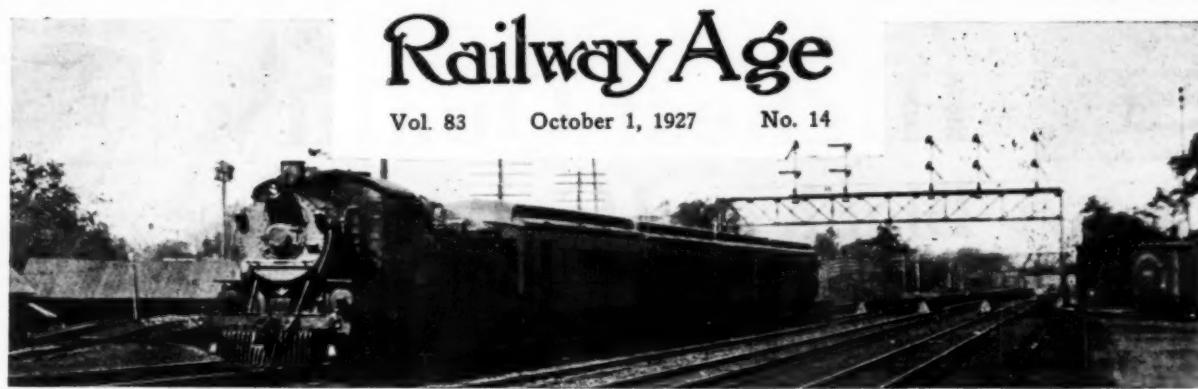


Railway Age

Vol. 83

October 1, 1927

No. 14



A Jersey Central Suburban Train at Roselle, N. J.

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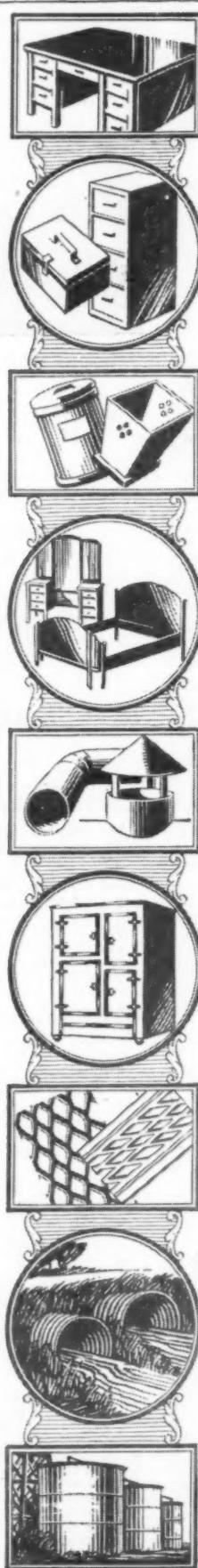
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Railway Age

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The Railroads as a Natural Background

THE *Railway Age* has had occasion to comment on several manifestations of a sort of reawakened general interest in the railroads. Mention has been made of the fact that there seemed to be a growing realization that the operations of the railroads today are just as interesting as they were in the days of the rate wars and the building of the transcontinental roads. It seems, just now, proper to call attention again to the important place the railroads have in the imagination of the public. Evidence of this is growing daily and one of the best places to witness it is in magazine and poster advertising. Railroad advertising is not referred to, but advertising of all kinds. Displays for a number of different products are built on a background of railroading—trains along the line, observation car platforms, the locomotive in action, and track. All these form a generally, quickly understood and widely appealing background, against which any portrayal of life is convincing to members of a public to whom railroads seem as much a part of life as the homes and natural surroundings in which they live.

Engine Failure Records

A LOT of fun has been poked at outstanding records which have been made in the reduction of engine failures, the inference being that the interpretation of an engine failure had been modified or stretched in such a way as to make these records possible. While there may have been some instances when marked differences in the records of neighboring roads were partly explained by variations in the definition of an engine failure, and while it is true that there exists today no generally recognized standard definition of an engine failure, still the cold facts show conclusively that a really remarkable improvement has been made on most roads in the average miles per engine failure—and the peak has apparently not yet been reached by a wide margin. There are several reasons for this improvement. Among these may be mentioned the more general recognition of the necessity of maintaining the equipment in the best possible condition; this is clearly reflected by a study of the annual reports of the Bureau of Locomotive Inspection. Undoubtedly, also, the scientific endeavor which has been made on many roads to locate and remove the basic cause of each failure and bring it home to the employee or employees responsible, has been a large factor in improving the records; this has been all the more effective in many instances because it has been done in the broad spirit of an educational campaign and also because it has gone step by step with those other factors which have been so instrumental in recent years in developing a strong spirit of co-operation and loyalty. The improvement in the engine failure record, during the past four years, startling

as the figures may seem in some cases, is not by any means a paper record, but represents a very substantial gain in actual performance.

Improvement in Freight Train Slack Conditions

NO better testimonial of present-day car department efficiency could be had than that which was brought out in the discussion of the topic "Slack in Freight Trains," at the last meeting of the Manhattan Air Brake Club. Two questions were asked: namely, what check is being made on the amount of slack in a freight train and what is the maximum slack between two cars? One of the members stated that about five years ago he checked the slack on a train of 75 cars and found the maximum distance between the back of the coupler head and the face of the striking plate to vary from 7 in. to 8 in. when the train was stretched. Recently he had occasion to make a similar check and found the maximum distance between the coupler head and striking plate to be about 4 in. This improvement is evidence that real results are being attained not only in draft gear maintenance, but in the direction of greater efficiency in all freight car repair work.

Advance Information for Yards

FLUCTUATIONS in traffic are one of the primary factors in increasing the expense of operating classification yards. Seasonal fluctuations occur regularly and arrangements may be made to cope with them without undue expense. It is the day-by-day fluctuations that cause the expense. A gravity yard with no cars going over the hump and with engines and crews idle is literally burning up a railway's money and needlessly so to a great extent. Certain fixed yard expenses are continuing ones and unavoidable, but there is no reason, for example, why 12 switching crews should be on duty when 10 crews or less could do the work. Similarly, there is no reason for having 40 car riders report when 30 are sufficient. In yards where the supervisory officers are not informed as to the traffic enroute, however, it is only natural that the man in charge should call a sufficient force so that he will not be caught in a "jam." Frequently the expected emergency does not arise and the railway suffers a needless blow to its pocketbook. The remedy for this is cheap and effective. Each yard should receive advance notification by wire of the business that may be expected in the next shift. This is easy to accomplish in yards which receive the majority of their business from their own railway. There is no reason in other cases, however, why reciprocal advance wire consists of trains should not be exchanged between different railways, to their mutual benefit. This is being done in some cases, the Rutherford yard of the Reading

being an example, but the practice should be more widespread than it is.

The Public Be Satisfied—If Possible

EVERY since the alleged ejaculation, "The public be damned!" was made by a prominent railway operator, the railways have been trying to live it down and to prove that they want to please the public by sparing no expense of money or effort in attempts to do so. But can the public be pleased? It would seem that to give perfect satisfaction to a public which is happy to stand in line outside of a moving picture theater for an hour in order to get in to see a second-rate show would be not at all difficult, but such does not happen to be the case where the railways are concerned. A large eastern road is so anxious that passengers on certain of its leading trains be satisfied that it has consistently followed the policy of never refusing a passenger a lower berth if he wants one, adding extra cars, or even extra sections, when necessary, so that no one who is averse to climbing a ladder will have to sleep in an upper berth. One would think that this is about as far as any reasonable person would expect a railway to go in trying to please the public, but the public that will put up with all manner of inconveniences at a movie appears to undergo a great change of disposition as soon as it enters a railway station. To say that it becomes unreasonably exacting in its demands would be to put it very mildly, for an officer of the railway which pursues this policy of "a lower berth for every one who wants one" recently admitted rather ruefully that its passengers are not only demanding lower berths and getting them, but are now refusing to accept berths which are in the end of the car, "over the wheels." What to do?

More Information Needed

THAT curve resistance is an important factor in the establishment of ruling grades has long been recognized by railway engineers through the practice of compensating for curvature. The rate of grade is reduced throughout the length of curves in order that the combined effect of curvature and grade resistance will not exceed that of the ruling grade on tangent track. To carry this principle to a practical conclusion, it is necessary to have some definite constant to represent the relation between curve and grade resistance, this being commonly expressed in decimals of grade per cent per degree of curvature. The mechanics of curve resistance is not a simple matter like the effect of gravity on a train moving up a grade. Values for curve resistance cannot therefore be determined by analytical study but must be based on the results of tests. Such test data served as the basis for specific rules for the compensation of grades for curvature adopted by the American Railway Engineering Association and published in the manual of that organization. These rules go into considerable detail and make allowance for degree of curve, length and other physical conditions. However, the report of tests recently made by the engineering experiment station of the University of Illinois and briefly reviewed in the *Railway Age* of September 10, page 477, gave rise to some pertinent questions concerning the prevailing assumptions as to compensation for curvature. Of particular significance is the wide variation of results obtained in these tests and the fact that they brought out no definite relationship between curve resistance and rate of curvature. With the prevailing tendency toward

the adoption of extremely flat grades in railroad construction, curve resistance assumes greater importance than in the days when a 0.5 grade was considered a reasonable minimum. Railway engineers, in locating low grade lines, are imposing severe limitations on curvature but until more complete information is available concerning the exact nature of curve resistance assumptions upon which they base compensation for curvature must necessarily be of an empirical nature.

Getting the Correct Answer

WHAT is accomplished by the various economy devices applied to locomotives with a view to effecting improvements in operation? Admittedly it is difficult to determine the facts in some if not most cases, owing to the influence of overlapping factors hard to segregate. Some means must be found, however, by dynamometer car or other reliable test, to secure this information as a guide to railroad officers in deciding whether it pays to install a given device and under what conditions successful operation may be expected. Indications are not lacking of a difference in opinion regarding some mechanical matters which can only be accounted for by a lack of knowledge of the facts. In a report on the value of back pressure gages, for example, presented at the Traveling Engineers' Convention recently held in Chicago, the committee made public the results of a questionnaire in which a number of roads expressed the unqualified opinion that locomotive back pressure may be held at a predetermined amount regardless of operating conditions, and a number of other roads answered the question just as confidently in the negative. Obviously one or the other of these groups of roads has not tested back pressure gages sufficiently to know what can be accomplished with them. The committee report referred to covered limited cut-off as well as cut-off control in accordance with back pressure, and it is interesting to note that the consensus, both in the committee report and subsequent discussion, was strongly in favor of both of these methods of improving locomotive operation.

The Decline of Car Loadings

THE freight car loadings of the railways have been, for some years, accepted as one of the best indications of the general activity of business. In each week of the last eighteen weeks for which figures are available—in other words, from about the middle of May to about the middle of September—total loadings have been less than in the corresponding week of 1926. The decline in coal loadings accounts for more than one-half of the total, and is largely explained by the strike in the union mines, but it is probably significant of general business conditions that during the period mentioned there was a decline in the loadings of every one of the large groups of commodities. The decline of total loadings in the eighteen weeks was from 19,108,255 cars to 18,337,783, and amounted to 770,472 cars, or 4 per cent. The decline in coal loadings was 349,058 cars, or almost 11 per cent. The declines in loadings of other commodities were as follows: Grain and grain products, 5.6 per cent; live stock, 3.0 per cent; coke, 13.5 per cent; forest products, 5.5 per cent; ore, 12.5 per cent; less than car-load merchandise, 2.0 per cent; miscellaneous, only 2 per cent. The decreases in railway gross and net earnings within recent months have been, of course, mainly due to this decline of freight business. The general

trend of freight business within recent weeks has been much the same as throughout recent months. In other words, there has been no marked tendency recently for it either to decrease or increase that cannot be accounted for by the usual seasonal causes. In the early months of the year total loadings were larger than in the corresponding part of last year, but as a result of the decline since then they were, from the beginning of the year to the middle of September, slightly smaller than last year, and it now seems probable that the total freight business of 1927 will be somewhat smaller than was that of 1926.

Excess Station Facilities in Suburban Territory

MOST railroads which operate suburban services established their stations before the advent of the automobile and while the population was a small fraction of what it has now become. Passengers having no means of reaching the stations except by walking, naturally required stations at frequent intervals. Does this necessity still exist? On one line which is fairly typical of at least one suburban area there are 13 stations in a distance of 8 miles, or an average station spacing of 0.6 miles. At two places on this line the distance between stations is only a quarter of a mile. This condition results in great expense to the railroad from the maintenance of an excessive number of stations, and from the additional train stops thus made necessary. From the standpoint of the passenger, the additional stops make for slower service. From a railroad traffic point of view, they undoubtedly induce many passengers to seek other means of transportation, who would be retained by the railroad if the service could be improved by eliminating some of these stops. Closing stations, of course, is a difficult job. Real estate values tend to augment in their vicinity and even at places where traffic is at the vanishing point there will often be a handful of people who will protest against any change. Just now on some lines by reason of competition from the private automobile and the bus, economy is most necessary. This fact is so patent in some cases that the public authorities ought to listen with favor to applications looking toward the correction of some of the more glaring instances of excess station facilities.

Electric Power Costs— Cutting the Demand Charge

IN most contracts between railroads and electric power companies a so-called "maximum demand" clause is included whereby rates are determined by peak requirements as well as by the actual consumption of energy. Some power users, railroads included, are inclined to look upon "demand charges" as not wholly legitimate, due largely to a misunderstanding of the basis upon which demand charges are arrived at. The public utility companies contend that it is most equitable to compute a customer's power bill in part on the basis of the amount of generating and distributing capacity which must be provided, as well as on the actual power consumption in kilowatt-hours.

If power customers were billed a flat or tapering consumption charge only, irrespective of their maximum power requirements, the power companies would be open

to the criticism that their most valuable customers (those with average loads not much less than their peak power demands) would thus be penalized for the benefit of other power consumers, whose load factor (ratio of average load to peak demand) might not be nearly as favorable to the power company. Railroads as power users are in most cases highly desirable customers, because theirs is largely an "off-peak" load with a favorable load factor. Thus it can be seen that the railroads are hardly in a position to assume an unfriendly attitude toward any utility rate-making basis which aims to give proper weight to peak demand as well as consumption.

Regardless of the justification for demand charges, however, there is room for substantial economies in the use of purchased power under present forms of utility contracts by the more extensive employment of automatic devices to limit the peak demand. Part of a railroad electric power load (electric traction possibly excepted) may be of a steady character, without much fluctuation during that part of the day when the load reaches its normal value. Pumps delivering water to overhead storage tanks and battery-charging equipment come within this class and may readily be connected to the power company's system through a load-limiting scheme which will automatically disconnect this load (if no disruption to operation is involved) whenever a temporary heavy load is connected to the line which will increase the railroad's maximum demand charge for the current billing period.

That the savings which can thus be effected are well worth the attention which should be given to this feature of railroad power contracts is not difficult to believe when it is remembered that demand charges constitute 20 to 50 per cent of most railroad power bills and monthly power costs running into several thousands of dollars are not uncommon among railroads using purchased power. Hence, any appreciable limitation of demand will result in substantial annual savings. The investment necessary is exceptionally small.

Commissioner Hall

IT has been reported upon seemingly good authority that Commissioner Henry C. Hall intends to retire soon as a member of the Interstate Commerce Commission. As the reason assigned is the condition of his health, it will probably be difficult to get him to change his mind if he has reached a definite decision. His retirement, if it occurs in the near future, will result in a loss to the public service of great moment. During the 13 years he has served on the commission Mr. Hall has been one of the hardest working and ablest officials of the federal government and has taken rank among the foremost men who have served on the Interstate Commerce Commission in the 40 years of its existence.

At no time could the retirement of an interstate commerce commissioner such as Mr. Hall be a more serious event than at present. Tendencies have been shown recently by the commission in its regulation which are causing profound concern to students of railway affairs who desire to see the policy of private ownership subject to government regulation succeed. The most marked of these disturbing tendencies is that of the commission to shape its policy of regulation in accordance with the special economic views and social philosophy of a majority of its members rather than in accordance with the lessons of railway history and with what the federal constitution and the laws for the regulation of the railway have long been understood to mean. Mr. Hall was

a distinguished lawyer before he was appointed to the commission, and has strongly opposed this tendency of the commission.

In the O'Fallon Case

One of his most significant utterances was the dissenting opinion written by him in the O'Fallon railway valuation case. Speaking for Commissioners Atchison, Woodlock, Taylor and himself, he said: "At the risk of appearing to lack vision we venture the reminder that the function of this commission is not to act as an arbiter in economics, but as an agency of Congress, to apply the law of the land to facts developed of record in matters committed by Congress to our jurisdiction. We may, indeed, in our annual reports to that body, recommend needed changes in legislation, but we may not make those changes ourselves. This dissent is from the refusal of the majority to apply that law to the O'Fallon." He emphatically declared that the declination of the majority of the commission to determine the present value of the railways by giving effective weight to present cost of reproduction was plainly contrary to decisions rendered by the Supreme court of the United States throughout a period of 30 years, and added: "If the law needs change, let those who made it change it. Our duty is to apply the law as it stands. It will be seen that the divergence between the majority and the minority as to our authority under the law is basic."

He expressed himself to the same general effect, and with equal emphasis, in dissenting from the decision rendered on May 20 by a majority of the commission in the Lake Cargo coal rate case. In that decision the commission reversed decisions previously rendered by it, ordered reductions in rates to help the union mines in Pennsylvania, and admonished the carriers serving non-union mines in West Virginia not to make corresponding reductions. Commissioner Hall warned the majority of the commission that "Congress has not made of us a special providence"; declared that the commission's admonition to the carriers serving the non-union mines "goes outside the findings and pre-judges issues which may hereafter come before us for determination in the manner contemplated by law," and added: "The query must follow: What right have we to invade the domain which the law has allotted to carrier management and to seek by hint, suggestion, warning or threat to coerce carriers into a course of action other than that which they have chosen or may choose to take? The essence of the Transportation Act is regulation and not management. That act was not a general reform act giving us powers to redistribute the business or the wealth of individuals or of producing regions in accordance with whatever social, economic or sectional views might, at a given time, command a majority of votes in this commission."

The Recent Tendency

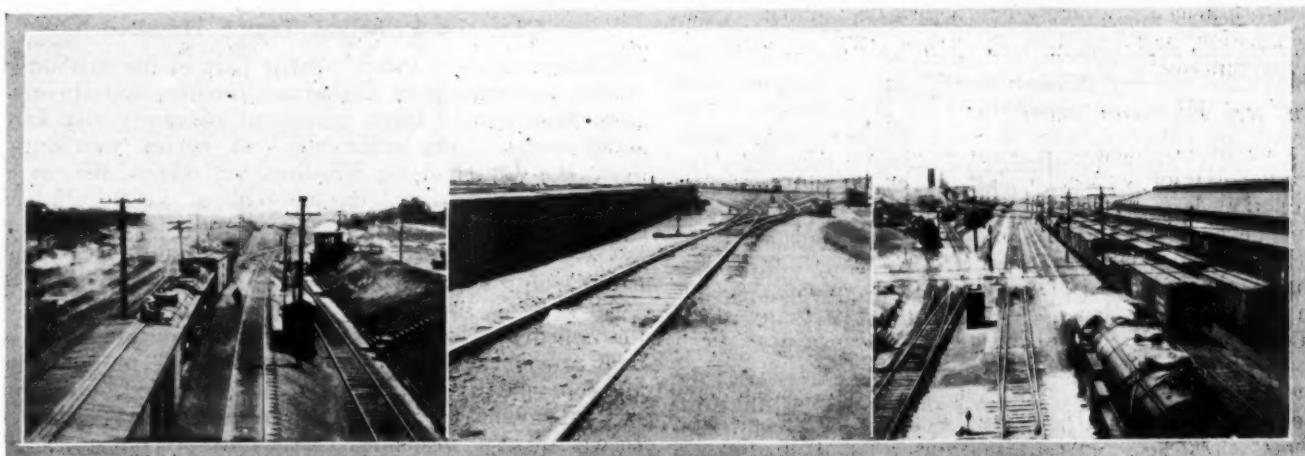
As these quotations indicate, nobody has indicated more clearly or condemned more forcibly and unanswerably than Commissioner Hall the recent menacing tendency of the commission to substitute its own views as to the fundamental law of the land for those of the Supreme Court, to rewrite statutes passed by Congress, and to disregard the expert judgment of railway officers both as to how the railways should be regulated and as to how they should be managed. While he has not been successful in resisting this tendency, he has had the ability to describe it in judicial but illuminating language and the courage to oppose it as strongly as he could.

If Commissioner Hall retires, President Coolidge will bear a heavy responsibility in appointing his successor. He should be succeeded by a man who believes, as Mr. Hall does, that the function of the commission is to administer strictly the existing law of the land as it applies to the railways, and that the plain purpose of the Constitution and the Act to Regulate Commerce as amended by the Transportation Act is to accord to owners of railway property the same fundamental rights as to owners of other property; to cause rates to be fixed without discrimination in accordance with transportation conditions; to maintain private ownership, and to allow the railways to earn a fair return on a fair valuation of their property in order that private ownership and management may be permanently successful. If the president appoints a man of Mr. Hall's caliber and views, he will render a real public service, although, regardless of whom his successor may be, it will be years before he will be able to get the knowledge and experience required to enable him to fill the place Mr. Hall will leave vacant.

Never since before the war has there been so much reason for apprehension regarding the future of regulation, and consequently regarding its effect upon the future of private ownership and railway service, as there is now.

Need for Resisting Tendency

When in 1911 the Interstate Commerce Commission began to refuse to grant advances in rates that were sought by the railways and demanded by changes that were occurring in economic conditions, almost the only persons who expressed alarm regarding the effects upon railway development and service that would be produced if its policy were not changed were spokesmen of the railways. The pessimistic predictions made by them then, however, began almost immediately to be justified by the unanswerable logic of events, and within five years the nation was confronted with a serious inadequacy of railway service which became constantly more acute and disastrous until it was relieved by the precipitous decline of general business activity and railway traffic in 1921. The danger in the policy of regulation adopted by the commission more than 15 years ago was obscured then by the generally prosperous conditions that existed at that time. Likewise, the danger in the policy being followed by it now is being obscured by the general prosperity of the country, by the increase that has occurred in the net returns earned by the railways within the last six years, and by the almost unprecedented adequacy and excellence of present railway service. Because the danger is not generally recognized, however, does not make it any less true that the commission, by favoring a radical policy of valuation that contravenes all past decisions of the Supreme court, by failing to make needed advances in rates in western territory, by ordering reductions of rates in supposed obedience to the Hoch-Smith resolution without making compensating advances plainly contemplated by that resolution, is following a policy that is adapted to undermine railway credit and that is directly contrary to that required to enable the railways permanently to prosper under private ownership and, as a result of their prosperity, to provide adequate service and render it economically. There are needed more members of the commission who will resist its prevailing general tendency, and the loss of one who has opposed it with the logic, force and courage that Commissioner Hall has may prove a heavy loss, indeed.



The Rutherford Yards of the Reading. Left, Eastbound Classification Yard; Center, Westbound Classification Yard; Right, Leads to East Hump

Putting 225 Cars an Hour Over Two Humps

Reading makes excellent operating record in classifying heavy coal traffic in large yard

MORE than a million and a quarter cars are classified annually in the Rutherford, Pa., gravity yard of the Reading and during the winter when the coal movement is heaviest, the number of cars handled through the yard per day averages well over 4,000, having reached 4,549 cars during February, 1926. These yards have established other interesting classification records. On January 31, 1926, for example, 5,191 cars were put over the eastbound and westbound humps in three shifts and this record was almost equalled on October 26, 1926, when, 5,107 cars were humped. On February 24, 1926, the three shifts working on the eastbound hump handled 2,793 cars, while the westbound humping crews have frequently broken this record for one day, the best record for the westbound hump having been established on October 26, 1919, when 2,981 cars were handled. An eastbound humping crew classified 1,034 cars in one eight-hour trick on February 2, 1926, while a westbound crew exceeded this with 1,117 cars for one trick on February 7, 1926. Twenty minutes is allowed for lunch on each trick, so that the last mentioned record represents an average of 2.4 cars over the hump per minute for the 7 hr. 40 min. worked. This figure includes all time which may have been spent in trimming the classification yard, waiting for car riders or other delays. In other words, a car went over the westbound hump every 25 sec. for 8 hours.

Analyzing the record day for both humps and allowing for three 20-min. lunch periods, it will be seen that in 23 hours of actual switching time 5,191 cars were classified over both humps. This is at the rate of 225.7 cars an hour and 3.7 cars a minute, or a car over one or the other of the two humps every 16.5 sec. for 23 hours.

A total of 54 classification tracks are in service, 37 eastbound and 17 westbound, on which 36 separate eastbound classifications are made directly on classification

tracks. The make-up engine, while making up the train makes 7 more groups of cars in the east end of the yard. On the 17 westbound classification tracks, 14 separate classifications are made. The number of cars per cut averaged 1.65 eastbound and 2.45 westbound during the first five months of 1927. When these factors are considered, the excellence of these records may be better appreciated.

During 1926, 1,385,770 cars were handled by a monthly average of 7.9 locomotives and 5,807 engine hours. The number of cars handled per engine hour averaged 18.3 and the number of cars per engine per day averaged 438.7. These figures were improved during the first five months of 1927, when 562,483 cars were handled with an average of 7.4 locomotives and with a monthly average of 5,397 engine hours. The number of cars handled per engine hour averaged 20.9, while the number of cars per engine per day averaged 501.6. The best month from the standpoint of engine efficiency was April, 1927, when 101,273 cars were handled with an average of 6.5 engines, 4,704 engine hours, 21.5 cars per engine hour and 516 cars per engine day.

Freight Handled Co-operatively

The yard at Rutherford is situated 5.5 miles east of Harrisburg, Pa., on the Harrisburg division of the Reading. By a co-operative arrangement, much of the freight received from and delivered to the western connections is handled by crews in joint service. This arrangement is in effect between Cumbo, W. Va., and Rutherford, 97.6 miles, in connection with the Pennsylvania; and between Hagerstown, Md., and Rutherford, 80.9 miles, in connection with the Western Maryland. The Reading has a line from Harrisburg to Shippensburg, Pa., where connection is made with the Cumberland Valley division of the Pennsylvania and with the Shippensburg branch of the western Maryland. Several through trains, with both crews and power in

joint service, are operated between Rutherford and both Cumbo and Hagerstown, Md., daily and the majority of the traffic moving through Rutherford is handled both east and westbound under this joint arrangement. The power of either railway is used on these runs indiscriminately, since the number of trains is practically the same in each direction. Charges are assessed on the basis of the cost per engine hour per class per year, on a mileage ratio. In the case of the Pennsylvania-Reading service to Cumbo, this mileage ratio figures out 51-49 respectively, while the Western Maryland-Reading service is on a 42-58 ratio. Bills are rendered on the basis of these figures.

The interchange between the various lines of the Pennsylvania enter Harrisburg proper and Rutherford is also on a joint basis. Joint service is maintained in both directions as in the other cases mentioned, except that, in this instance, the service is performed by yard crews. Charges for this service are also on an engine-hour basis, but with no mileage ratio involved. The

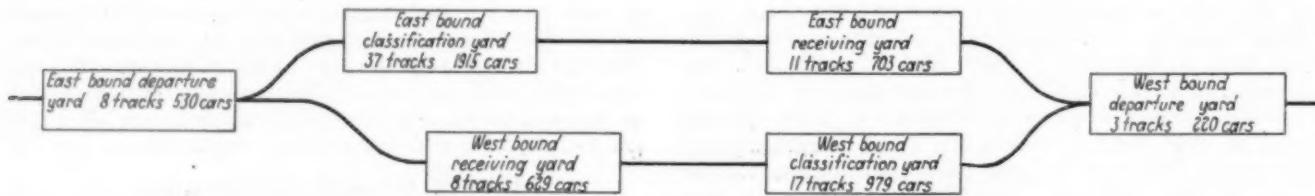
Table 1—General Summary—Rutherford Yards Performance

	Year 1926	Jan.-May 1927
Cars handled	1,385,770	562,483
Engines employed per day	7.9	7.4
Engine hours per month	5,807	5,397
Cars per engine hour	18.3	20.9
Cars per engine day	438.7	501.6
Cars transferred per month	104	136
Average cost of transfer	\$6.28	\$5.66
Cars damaged per month	13.8	16.0
Cars repaired per month	6,375	7,277

business moving through Rutherford and interchanged in this manner amounts to about 6,000 cars per month in each direction.

Both the Pennsylvania and the Western Maryland carry the joint service a step farther by making a Harrisburg classification for the Reading on the through trains to Rutherford. All cars destined to industries in Harrisburg itself and not requiring movement to Rutherford are placed at the head end of the trains, so that they may be switched out by the Reading at Harrisburg with the minimum delay. Such cars are restricted to two trains daily, in order that the through business may not be delayed by unnecessary stops and switching at Harrisburg. In return for this service, the Reading makes some few classifications for the other lines on westbound business.

Due to the rather unusual geographical layout of the



Operating Lay-Out of the Rutherford Yard of the Reading

Reading and the requirements of the various industries, it is necessary to make up trains at Rutherford for movement to and from a number of terminals east of Rutherford. For example, business is taken to and from Reading, Pa., 46.2 miles; Bridgeport, Pa., 89.7 miles; Port Richmond, Pa., 107 miles; Allentown, Pa., (Central of New Jersey) 83.7 miles; Allentown, (Lehigh Valley) 83 miles; Bethlehem, Pa., 91.9 miles; Catasauqua, 86 miles; and Tamaqua, Pa., 87.3 miles. This diversity of movement is also largely responsible for the unusual number of eastbound classifications it is necessary to make at Rutherford.

Coal the Principal Traffic Handled

Bituminous coal forms a large part of the eastbound traffic, particularly in the winter months, and there is a correspondingly large movement of empty coal cars westbound. Some anthracite coal moves westbound from the mines on the Reading, but this movement is relatively small, averaging only about 1,000 cars per month. During the four winter months loaded coal cars comprise 61 per cent of the total loaded movement eastbound, while empty coal cars form nearly 81 per cent of the total empty movement westbound.

The current of loaded traffic through Rutherford is very definitely eastbound. Using the same four months for comparison, 91 per cent of the eastbound movement is loaded, while only 15 per cent of the westbound movement consisted of loaded cars. This preponderance of empty movement westbound is characteristic of all eastern roads, but it is intensified in the case of Rutherford yard by reason of the movement of empty coal cars, which must be returned light, since they are suitable for the loading of few commodities other than coal.

A comparison of the traffic through Rutherford during a heavy month and a light month is given in Table 2.

Advance Information Obtained

In addition to the joint train service maintained with the Pennsylvania and the Western Maryland, a joint information service is also maintained, whereby the yard office at Rutherford is advised by telegraph of the consist of trains moving from Cumbo and Hagerstown several hours in advance of their arrival. Taken in conjunction with the advice received from the Reading's own terminals east of Rutherford as to what business is moving

Table 2—Summary of Traffic

	January 1927		May, 1927	
	East	West	East	West
Loaded coal	34,458	1,190	24,775	1,407
Loaded freight	21,985	11,173	24,139	12,885
Empty coal	673	36,826	464	26,468
Empty freight	5,781	10,993	6,403	9,796
Total	62,896	60,188	54,176	50,556

westbound, this gives the supervisory force accurate information as to the number of cars and the class of traffic the yard will be called upon to handle in any one trick. Accordingly, it is possible to assign the force

and the power in a most efficient manner. This results in the elimination of much dead time and wasted effort during dull periods and at the same time insures an adequate force being on hand to handle the traffic, however heavy it may be.

This factor, coupled with other operating efficiencies, has enabled Rutherford yard to set an unusual record for car movement. Using a typical day as an example, it is found that the average time of all cars, exclusive of bad order cars, passing through the yards was only 8 hr. 8 min. During the day in question, 1,455 cars were handled eastbound in an average time of 9 hr. 5

min. each and 1,364 cars westbound in an average time of 7 hr. 5 min. each.

Facilities at Rutherford

The yard is situated in a valley and, when built, the right-of-way owned, while quite sufficient, was relatively narrow. As a result, the facilities were so designed as to be compact in the matter of width. The entire group is operated on the straight-line principle, the eastbound section consisting of a receiving yard, a classification yard and a departure yard, in that order from west to east, while the westbound group lies in the same order in the reverse direction. The westbound receiving yard parallels the eastbound classification yard and the east hump lead tracks, while the westbound classification yard parallels the eastbound receiving yard. The two departure yards occupy the entire east and west ends of the yard right-of-way, except for leads to the respective receiving yards. Each of the six yards has a thoroughfare track to facilitate operation around the yard where necessary. Passenger trains operate along the extreme north and south sides of the yards, and are protected by interlocking plants at both ends of the yard.

The six yards consist of 84 tracks, with a total capacity of 4,976 cars divided as follows:

	Tracks	Cars
Eastbound:		
Receiving yard	11	703
Classification yard	37	1,915
Departure yard	8	530
Westbound:		
Receiving yard	8	629
Classification yard	17	979
Departure yard	3	220

The entire layout comprises 69.7 miles of track, not including the east and westbound main tracks. There are 377 switches in the yard.

The grade in the eastbound classification yard is 0.5 per cent and slightly less in the westbound classification yard. The east hump yard is equipped with an electro-pneumatic switch machine, while switches in the westbound yard are operated by hand.

Night operation is facilitated by a system of flood-lighting, this being one of the first installations in the country. It is well maintained and lights are situated at all strategic points of the yard, so that adequate illumination is available regardless of weather conditions.

The car riders on the east hump are returned from the classification yard to the hump after delivering their cuts by a gasoline motor car, capable of hauling 30 men as a maximum load. On the west hump the car riders walk back from the classification yard.

Operation of the Yard

After the incoming trains are delivered in the receiving yard and the road crews cut off, car inspectors examine the trains and attach shop cards on all cars to be repaired. Seal records are taken by a force of seal clerks while the train is being inspected. When the inspection is finished, the train is shoved to the hump by a yard engine. The switching cuts are marked on the cars in chalk by a car marker as the train is being pushed up to the hump. Copies of the switching list used by the car marker are also supplied to the hump conductor and tower operator. At this time all car numbers are compared with numbers on the slip to check errors in numbers or initials. The car marker's slip also bears notations of all cars requiring placards, as stamped on the tickets, and any cars not properly placarded or cars bearing placards which are not required are corrected by the car marker.

The crew at the head of the hump consists of a conductor and a cutter. The conductor also acts as

dispatcher for the car riders, while the cutter aids in getting the "drags" from the receiving yard to the hump.

As fast as sufficient cars are accumulated in the classification yard to make a train of the proper groups for one terminal, make-up crews, stationed at the end of the classification yard, assemble the train and transfer it to a track in the departure yard. Here it is tested for air and inspected before being dispatched.

Westbound trains are handled in a similar manner, except that road crews make up their own trains in the westbound classification yard.

The Car Riding Force

The number of car riders employed varies with each trick, depending upon the amount of business to be

Table 3—Car Riders' Performances

	Eastbound hump			Westbound hump		
	First trick	Second trick	Third trick	First trick	Second trick	Third trick
January, 1926						
Cars humped	22,943	21,231	20,357	22,981	23,049	19,374
No. of cuts	13,815	12,265	12,276	10,048	8,743	7,786
No. of riders	970	941	970	475	456	473
Average cuts per rider	14.2	13.0	12.7	21.1	19.2	16.5
Average cars per rider	23.6	22.5	20.9	48.3	50.5	42.4
February, 1926						
Cars humped	23,762	22,744	20,987	20,506	20,496	18,886
No. of cuts	14,087	12,715	12,059	8,405	8,192	6,908
No. of riders	949	938	952	417	386	430
Average cuts per rider	14.8	12.5	12.6	20.1	21.2	16.0
Average cars per rider	25.0	24.2	22.0	49.1	53.1	43.9
February, 1927						
Cars humped	21,470	19,039	19,632	19,238	18,788	16,877
No. of cuts	12,756	11,713	11,551	7,216	6,379	6,296
No. of riders	854	831	837	376	367	397
Average cuts per rider	14.9	14.1	13.8	19.2	17.4	15.8
Average cars per rider	25.1	22.9	23.4	51.2	51.2	42.5
May, 1927						
Cars humped	17,712	17,042	17,595	16,644	16,423	14,837
No. of cuts	10,595	10,545	10,859	6,456	6,667	6,210
No. of riders	631	655	671	390	393	420
Average cuts per rider	16.8	16.1	16.2	16.5	16.9	14.8
Average cars per rider	28.0	26.0	26.2	42.6	41.8	35.3

handled, as indicated by the advance telegrams. Their activities are reflected in Table 3, from which it will be noted that the average number of rides per trick in the westbound yard is somewhat higher, despite the fact that the riders in the west yard have to walk back to the hump. This is due, of course, to the preponderance of empty cars westbound and the fewer classifications in that direction.

A friendly rivalry is encouraged between the east and westbound car riding forces and much interest is displayed in the results. The force consists almost entirely of veterans in point of service and they take much pride in doing their job well. This applies to keeping down yard damage and personal injuries as well and they are proud of the record they have made in reducing damage. So far this year, the average number of cars damaged has been held down to 16 cars per month, including all damage, however slight. When it is considered that the average monthly movement through the yard during the same period has been well over 112,000 cars it will be seen that the percentage of cars damaged is very small. During the months of comparatively light traffic, this record is bettered very materially. Last year, for example, the average number of cars damaged averaged less than 14 per month and in May, 1926, only five were damaged out of nearly 100,000 cars handled.

Method of Handling Waybills

As soon as the train arrives in the receiving yard, the conductor delivers the bills to the yardmaster's chief clerk, who inspects the tickets for routes, overweights, embargoes, diversions, tracing and the distribution of certain engine fuel. Switching lists are made for the car marker, the hump conductor and the tower operator.

The bills then go to a yard clerk, who separates them into their various classifications. This clerk also directs the assembling of outbound trains. The make-up crews are given the numbers of all cars to be assembled. The conductor checks these numbers against the numbers of the cars on the classification tracks and hands the card to an assistant yardmaster stationed at the east end of the classification yard, who rechecks the work of the yardmaster's clerk at the hump. This is done in order to avoid errors and to prevent cars leaving the yard without a bill, or bills leaving the yard before the car. By this means errors are eliminated and the road conductors are not required to recheck the train before leaving the yard.

A Good Class of Employees

The supervision at Rutherford is delegated to 2 assistant trainmasters and 12 yardmasters, while since the headquarters of the division superintendent are at Harrisburg, only a few miles away, that officer is also enabled to give the yard frequent personal supervision. Pleasant living conditions in the vicinity of Rutherford have enabled the Reading to maintain a force of employees of a somewhat higher class than is usual in yards not so fortunately situated. The labor turn-over is very small, most of the men now employed having many years of service to their credit. Married men find homes in the hills surrounding the yards, while single men are housed in a well-equipped Y. M. C. A. dormitory.

Handling Bad Order Cars

A modern car shop of brick construction, 600 ft. by 125 ft., aids materially in getting bad order cars through the yard without undue delay. There are four tracks through this shop, having a capacity of 40 cars requiring general repairs or 52 cars requiring lighter repairs. In addition, shop tracks in the open, having a capacity of 318 cars, are assigned to cars requiring light repairs. The car force at Rutherford includes 218 men in the shop and 113 men in the yard, including inspectors, car repairers, packers and air brake inspectors.

All bad order cars are humped onto tracks set apart for them, conveniently situated with reference to the car shop and repair tracks. After being classified as bad orders, the cars are spotted on the repair tracks, adjacent to the car shop, or inside it, depending upon the nature of the repairs required. After the repairs have been made, the cars are again humped into their proper classification.

Repair tracks are pulled several times daily and every effort is made to get the cars out of the shop quickly. That this has been successful is indicated by the fact that over a considerable period the average detention time of loaded cars requiring general, as well as light repairs is only 25 hr. and 55 min.

A modern transfer dock is maintained at Rutherford, and the number of cars transferred there monthly averaged 104 in 1926, while for the first five months of this year the average was 136. The average cost per car in 1926 was \$6.28, and this was reduced to \$5.66 during the first five months of 1927.

THE FLORIDA EAST COAST has counted 23,710 persons from states north of Florida, going into that state in the month of August; and not going by railroad; that is to say, this is the number of persons counted in 5,711 motor cars from other states which were seen crossing the St. Johns river, at Jacksonville, going south. This caravan included 396 cars from New York, 128 from California and 14 from Canada.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading during the week ended September 17 mounted to a new high record for the year, following the Labor Day holiday in the preceding week, with a total of 1,124,231 cars. The total, however, represented a decline of 55,028 cars from that of the corresponding week of 1926 and an increase of 25,604 over that of 1925. Grain and grain products was the only commodity classification in which loadings showed a gain over the corresponding week of last year. Coal loading declined 23,996 and ore 21,578 cars from the 1926 totals. Loadings in the Pocahontas and Southern districts were heavier than a year ago but loadings in other districts were lighter. The summary as compiled by the Car Service Division of the American Railway Association is as follows:

Revenue Freight Car Loading

WEEK ENDED SATURDAY, SEPTEMBER 17, 1927

Districts	1927	1926	1925
Eastern	243,658	265,774	240,094
Allegheny	224,912	241,239	210,491
Pocahontas	64,663	61,797	57,371
Southern	166,335	166,241	164,179
Northwestern	175,733	185,827	174,893
Central Western	161,926	169,758	165,059
Southwestern	87,004	88,623	86,540
Total Western district	424,663	444,208	426,492
Total all roads	1,124,231	1,179,259	1,098,627

Commodities

Grain and grain products	60,356	49,577	54,106
Live stock	31,765	39,543	33,508
Coal	182,082	206,078	171,925
Coke	9,730	12,396	11,441
Forest products	69,321	73,059	70,274
Ore	56,231	77,809	59,696
Mdse. L.C.L.	267,590	269,382	270,624
Miscellaneous	447,156	451,415	427,053
September 17	1,124,231	1,179,259	1,098,627
September 10	989,472	1,024,998	975,499
September 3	1,117,069	1,143,448	1,102,785
August 27	1,109,225	1,128,563	1,124,438
August 20	1,066,636	1,081,503	1,079,995
Cumulative total, 38 weeks	37,742,254	37,958,733	36,771,919

Car Loading in Canada

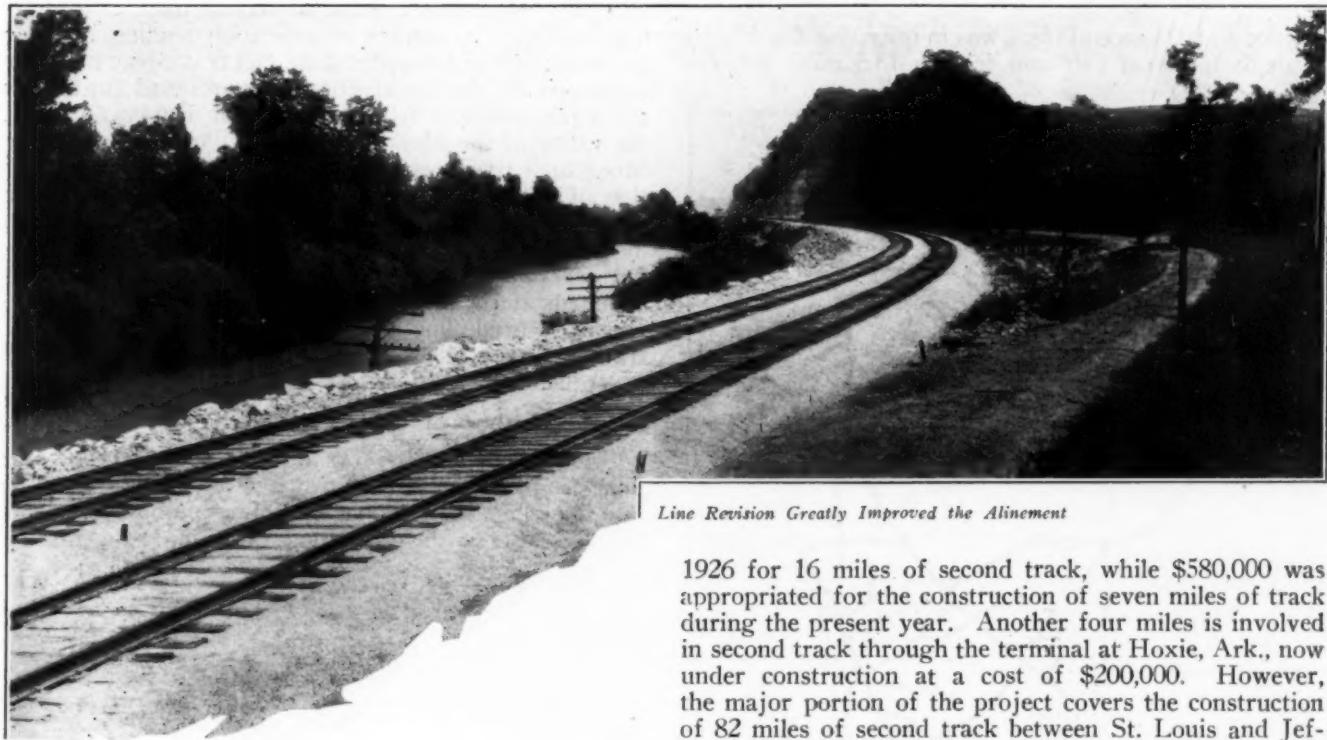
Revenue car loadings at stations in Canada for the week ended September 17 totaled 70,483 cars, an increase over the previous week of 12,103 cars and an increase of 2,970 cars over the same week last year.

Commodities	Total for Canada			Cumulative totals to date	
	Sept. 17, 1927	Sept. 10, 1927	Sept. 18, 1927	1927	1926
Grain and grain products	7,577	5,756	15,933	241,850	249,959
Live stock	2,992	2,539	2,645	76,250	75,844
Coal	8,871	5,721	7,300	243,735	199,026
Coke	414	353	323	11,728	13,347
Lumber	4,177	3,636	3,480	140,759	135,215
Pulpwood	1,679	1,664	1,936	122,372	103,794
Pulp and paper	2,197	1,768	2,244	81,673	89,144
Other forest products	3,161	2,853	2,660	113,028	114,920
Ore	2,181	2,314	2,320	61,090	63,266
Merchandise, L. C. L.	18,687	15,817	17,633	631,324	598,981
Miscellaneous	18,547	15,959	15,577	538,830	515,730
Total cars loaded	70,483	58,380	72,051	2,262,639	2,159,226
Total cars received from connections	36,992	32,652	37,896	1,394,808	1,375,942

L. L. WILSON, an officer of the police department of the Southern, who died on September 12, at New Orleans, while on a journey from his home in Danville, Va., had been in the service of the Southern for 23 years, and during that time had been wounded on 13 different occasions.

Second Track Work Involves Extensive Line Revision

Improvement project on Missouri Pacific's St. Louis-Kansas City line presents distinctive problem



Line Revision Greatly Improved the Alignment

THE remarkable growth of traffic which the Missouri Pacific has enjoyed during the past five or six years has placed a heavy burden on the operating department by reason of an inadequate mileage of double track. The need for increasing track capacity has been one of long standing, but the limited credit of the property during the years preceding the present period of increased prosperity definitely precluded any such major improvements. As a result, double track on the Missouri Pacific at the beginning of 1925 totaled only 275 miles, of which 90 miles was on the low-grade freight line between East St. Louis, Ill., and Thebes. There were also several short sections, totaling 99 miles, on the line from St. Louis to Texarkana and the Southwest and only 30 miles in three short sections on the main line from St. Louis to Kansas City and the West.

Investigation of the two lines last named showed that certain sections of single track were the cause of serious traffic delays. On the line to Texas congestion occurred most frequently between Little Rock, Ark., and Benton, the junction with the Hot Springs branch, while on the St. Louis-Kansas City line the long mileage of single track between St. Louis and Jefferson City was a source of delays throughout practically its entire length.

The result of these studies was the development of a project for 109 miles of second track work, to be completed in three years. Of this total, 23 miles embrace additional second track south of Little Rock at a cost of \$1,335,000, \$785,000 being appropriated in 1925 and

1926 for 16 miles of second track, while \$580,000 was appropriated for the construction of seven miles of track during the present year. Another four miles is involved in second track through the terminal at Hoxie, Ark., now under construction at a cost of \$200,000. However, the major portion of the project covers the construction of 82 miles of second track between St. Louis and Jefferson City, involving an expenditure of \$9,540,000. Of this total mileage, 52.5 miles was completed during 1925 and 1926 at a cost of \$6,115,000, work on the remaining 29.5 miles, representing an expenditure of \$3,425,000, now being under way. The significance of this project will be better understood from an examination of the map and profile.

Much of Line Is on Water Grade

The Missouri Pacific's line from St. Louis to Kansas City is the only one between those important railroad centers which takes full advantage of the favorable grades afforded by a location along the banks of the Missouri river. However, the builders of this line sacrificed grades for distance in locating the first 45 miles out of St. Louis, for instead of following the wide northward bend of the Missouri river the line was projected in an almost due westerly direction across a heavy rolling country to the south bank of the Missouri river at Labaddie. This location occupies the valley of the Meramec river for a distance of about 18 miles of which approximately 14 miles is on easy grades, but to reach this location it was necessary to carry the line over two summits, one on the east with its crest at Kirkwood, separating this valley from that of the River Des Peres, and another on the west, Grays Summit, which separates it from the Missouri river. In addition to these summits, which are crossed with grades of one per cent in both directions, there are numerous other undulations in the grade line in this first 45 miles of the line which militate against economical operation. This part of the line is, therefore, in sharp contrast with the remaining 246 miles to Kansas

City which lies close to the south bank of the river for a large part of the way and includes no grades in excess of 0.3 per cent in either direction.

West of Jefferson City there is an alternate main line to Kansas City via Sedalia and Pleasant Hill. This affords a more direct route, being eight miles shorter than the line via Lexington along the river, and is used by the through passenger trains between St. Louis and the west, but the grades are heavier than on the river line which is used largely for through freight movement.

Had Only 18.5 Miles of Second Track

Prior to 1925 second track was in operation for 5 miles through Jefferson City and for the 13.5 miles between



Missouri Pacific Lines in Missouri and Arkansas

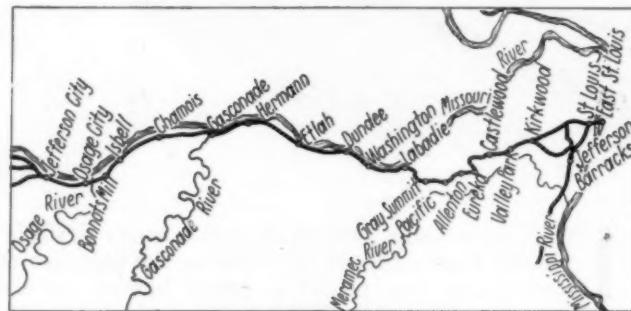
St. Louis and Kirkwood, both sections being primarily terminal relief facilities, the section between St. Louis and Kirkwood serving also to facilitate the handling of a considerable suburban traffic. Difficulty in handling the traffic offered over the intervening 111 miles of single track, clearly pointed to the need of second track for the entire engine district from St. Louis to Jefferson City. This distance regularly handles six passenger trains in each direction and in October, 1924, handled a total average daily traffic of 45 trains with a maximum on October 30 of 49 trains.

However, there were very good reasons for not following the usual procedure of a progressive extension of second track from the terminus of the line, which is usually found of especial advantage in clearing up the

interference between inbound and outbound trains during the evening and early morning hours. In the first place, it was deemed highly undesirable to construct a second track between Kirkwood and Labaddie on the existing grades and thus commit the management still further to an unsatisfactory physical condition. On the other hand, the replacement of the old line with a new double-track line on improved grades would have entailed an expenditure which could be applied in less difficult locations for the construction of a much larger mileage of second track and the need at the time was that of a maximum mileage of second track at a minimum outlay. A further consideration tending to deter any work east of Labaddie is the fact that a plan has been developed for the construction of a proposed cut-off, on a 0.3 per cent line from a point near Eureka, through the valley of the Meramec and Des Peres rivers to the Mississippi river near Jefferson Barracks. The completion of this line, together with a new 0.3 per cent line which has been located over Grays Summit from Labaddie to Pacific, will give the Missouri Pacific a continuous 0.3 per cent line from Kansas City to the St. Louis terminals and would thus serve to divert from the present heavy grade line into the city, a sufficient volume of traffic to make the need of second track of much less consequence than it is at present.

Method of Handling Freight Traffic

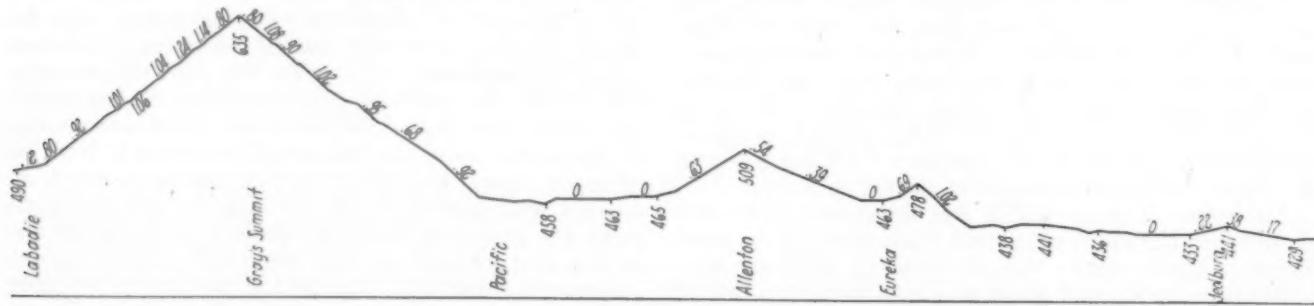
Another point which has to be considered is that the presence of heavy grades on the easterly 45 miles of the line does not affect tonnage ratings on the rest of the line, because of the prevailing operating arrangement.



Location of Missouri Pacific, St. Louis to Jefferson City

St. Louis is an important point of destination, origin and transfer of railway traffic. Through traffic is of minor importance. Furthermore, tracks in the Missouri Pacific yards in St. Louis are too short to take full road trains. Because of this, eastbound trains cut tonnage and westbound trains fill out tonnage at Labaddie, turn-around trains between Labaddie and the St. Louis terminals providing the necessary balance in the movements east and west of Labaddie.

Because of all of these considerations, plans were developed for the progressive second tracking of the



Profile of the Missouri Pacific Between

line along the Missouri river between Labaddie and Jefferson City, with a supplemental section 2.63 miles long through Eureka and to the top of a minor summit at Allenton to serve as a relief track for the meeting of eastbound and westbound trains during morning and evening hours.

In laying out the work for the first year's construction, primary consideration was given to the points of maximum congestion, keeping in mind also those locations where the maximum mileage of second track could be secured for the least expenditure. On this basis, \$2,680,000 was appropriated for 30 miles of new main track in four sections, namely the 2.63 miles of relief track at Eureka mentioned above, 4.87 miles at Berger,

The location of the Missouri Pacific's line between Labaddie and Jefferson City is characteristic of lines along large rivers in the middle west. It is supported at an elevation above flood level of the river in the talus slope of bluffs which rise to a maximum height of 200 ft. above the bottom lands that lie between the base of these bluffs and the river bank. At some places the river bank is a half mile or more from the bluffs. At other points the toe of the railroad embankment is in the river and riprap or revetment is necessary to protect the slopes from erosion.

Constructed at a time when economy of first cost was a prime consideration, the line virtually followed the grade line contours, with the result that more than

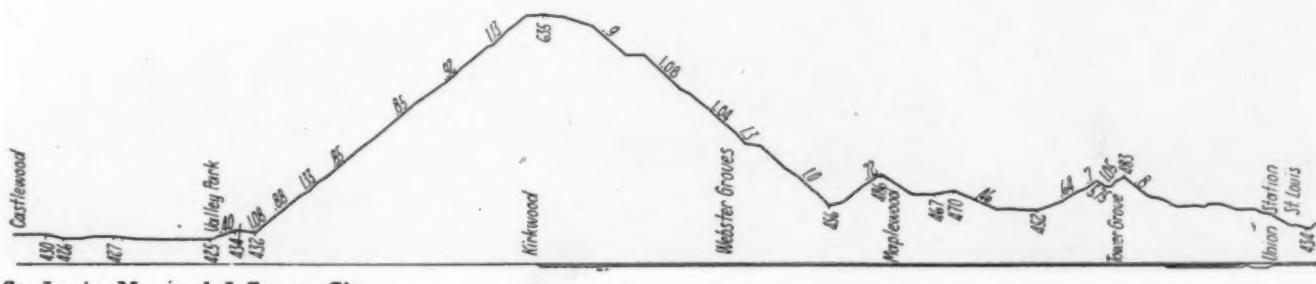


Heavy Rock Excavation Was Involved in the Line Revision for the Elimination for the Dundee Tunnel

18.81 miles from Morrison to Isbell and 3.65 miles through Osage to Algoa. In 1926 work covering 22.5 miles at a cost of \$3,435,000 was authorized covering work in two sections, 19.28 miles from Washington to near Berger and 3.26 miles east of Jefferson City. This work is being followed up during the present year by the construction of second track in three gaps left between sections previously completed, namely from Isbell to the Osage river, 8.01 miles; from Morrison to Herman, 11.81 miles; and from Washington to Labaddie 9.40 miles; or a total of 29.2 miles at an estimated cost of \$3,425,000.

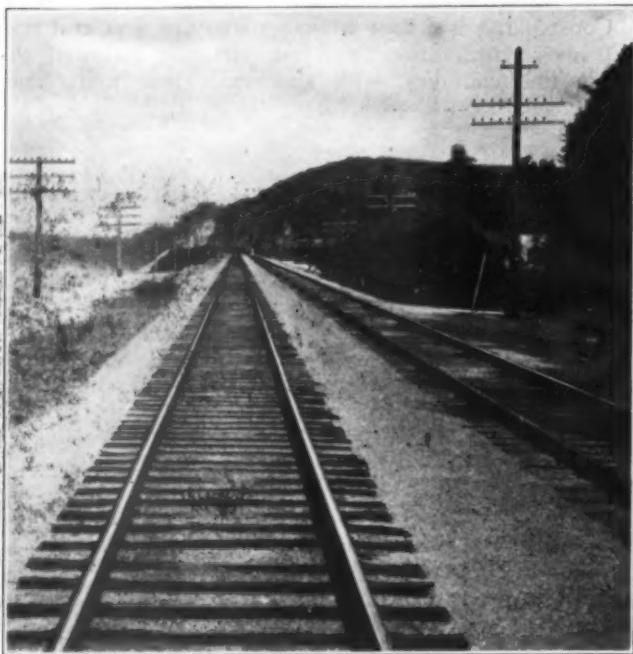
half the line is on curves, although few curves are in excess of three degrees. Exception to this hillside location obtains at several points where the valleys of large tributary streams form openings in the solid face of the bluff wall. Here the line necessarily traverses the bottom land of the valley outlets. At Dundee the old line was carried through a shoulder in the bluff by a tunnel 571 ft. long. There is another tunnel between Jefferson City and Algoa 637 ft. long, known as the Moreau tunnel.

To eliminate much of the curvature in the old line and to reduce curvature with few exceptions to a maxi-



St. Louis, Mo., and Jefferson City

mum of three degrees, the construction of the second track has been accompanied by extensive changes in alignment, carried out in large part by building embankments on the bottom lands opposite places where the bluff wall recedes in a concave curve. Projecting shoulders of the bluffs were also cut away, particularly heavy rock excavation being involved in a cut to eliminate the Dundee tunnel and in a change of line opposite the Moreau tunnel. But line revision by this means



An Extensive Line Revision Was Made to Eliminate the Moreau Tunnel Which Is Seen at the Right

was avoided as far as possible for the same reason that it was generally found undesirable to place the second track inside the old on parallel construction, namely that the talus at the base of the bluffs is composed of unstable material. In most cases where cuts were excavated through the talus, it was found necessary to remove all material to the rock ledge. Experience also showed the necessity for the recleaning of cuts after they had passed through a winter, to remove masses of rock loosened by frost, as well as to give particular attention to trees standing on the hillside above the top of the cuts. As an illustration of the difficulty experienced in cut excavation, there is a

cut near Bonnett Mill involving a measured excavation of 7,000 cu. yd. from which it was necessary to remove 25,000 cu. yd. before a condition of stability was established.

Heavy Rock Excavation

Notwithstanding this fact, excavation in cuts composed an important element of the work, particularly in the section between Washington and Berger, which embraced a heavy rock cut for the elimination of the old Dundee tunnel. Work on this unit embraced 850,-440 cu. yd. of excavation in earth or borrow, 309,835 cu. yd. of loose rock excavation and 464,000 cu. yd. of solid rock excavation. The section just east of Jefferson City involved 587,520 cu. yd. of excavation, of which 403,395 cu. yd. was solid rock. Of this total 300,000 cu. yd. was from a cut having a maximum depth of 100 ft. in the line change eliminating the Moreau tunnel. The total quantities for the entire second track project between St. Louis and Kansas City include 2,524,000 cu. yd. of earth excavation or borrow, 1,289,000 cu. yd. of loose rock and 1,309,000 cu. yd. of solid rock.

Construction methods varied with the diversified conditions imposed. Some of the embankments on changes of line were made with team outfits from borrow. The remaining work was handled with power shovels served by both narrow-gage and standard-gage equipment. Narrow-gage cars were found of particular advantage where the material was moved from cuts inside the operated line to embankments a short distance away on the opposite side, using removable rails to pass over the operated track. This method also resulted in a minimum fouling of ballast. Standard-gage outfits were used for longer hauls over the operated track, the trains being operated by the contractor with crews furnished by the railroad. Special care was taken to avoid blocking the operated track in widening cuts and in only rare cases were trains delayed from this cause. Extra track material was kept on hand at all times for the replacement of any rails broken by falling rock.

Roadbed and Track Standards

The crown of the double-track roadbed is given a width of 35 ft. The base of double-track cuts at roadbed level is made 43 ft. wide in earth and from 37 ft. to 39 ft. in rock. Slope stakes for cuts in rock with an earth overburden are set on the basis of one to one slopes in the rock. But when the rock is uncovered, the stakes for rock excavation are set for $\frac{3}{4}$ to 1 slopes, thus leaving a berm at the rock surface. Where the



Construction View in the Early Stages of the Dundee Tunnel Line Revision

nature of the rock permits, slopes as steep as $\frac{1}{4}$ to 1 have been found practicable.

The tracks are given a preliminary 10-in. lift on sand ballast obtained from pits on the Meramec river, and are carried through a winter on this sub-ballast which settles to about eight inches. Top ballast of chats is then applied to give a full depth of 12 in. under the ties.

Main tracks are spaced 13 ft. center to center except



Much of the Excavation Was in Side Hill Cuts in Rock

where they are spread to 28 ft. for center passing tracks of 100-car capacity at intervals of seven to ten miles. Turnouts for the main line have No. 10 main line frogs while the crotch frog is No. 7. The line is being equipped with automatic block color-light signals for operation in both directions on each track. At the crossings of the Gasconade and Osage rivers where single-track bridges are being retained in service, the switches at the ends of double track are provided with No. 20 frogs and are operated by remote control from interlocking towers which also control the movement in and out of passing tracks.

Winston Brothers Company of Minneapolis was the contractor for all grading work during 1925, as well as for the work being done during the present year. The work during 1926 was divided between this firm and the List Construction Company of Kansas City. Track laying and ballasting is being done under contract by the Bilhorn Construction Company of St. Louis and the Winston Brothers Company, the railroad delivering the track materials to the contractor and supplying work train service. The improvement work is all under the general direction of E. A. Hadley, chief engineer of the Missouri Pacific, and under the direct supervision of C. S. Sample, construction engineer.

A. C. L. Train Control Installation Approved

WASHINGTON, D. C.

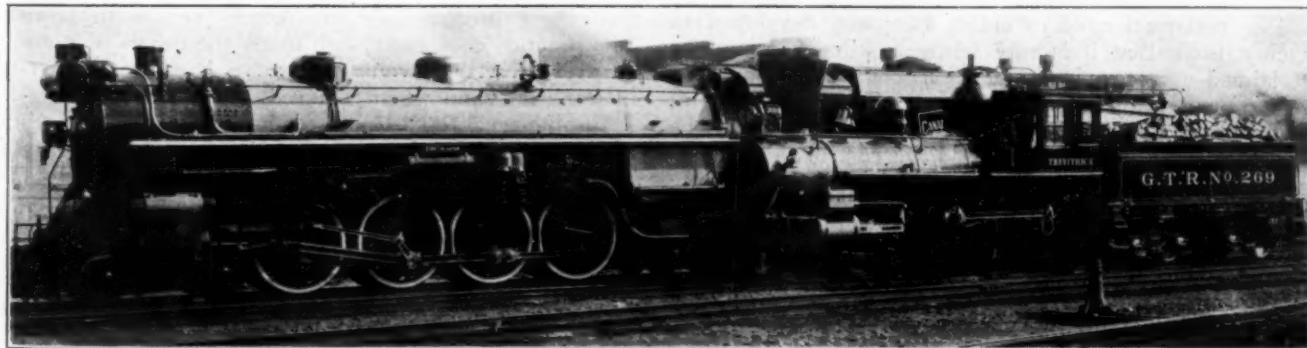
THE Interstate Commerce Commission, Division 1, has approved with an exception the installation of the automatic train-stop device of the General Railway Signal Company on the Fayetteville district of the First division of the Atlantic Coast Line between South Rocky Mount, N. C., and Florence, S. C., 172.3 miles, pursuant to the commission's second order. The first installation was between Richmond, Va., and Rocky Mount, 122.6 miles.

The cost of this installation, as reported by the carrier, covering wayside and locomotive equipment, is as follows:

Roadway equipment:	
Total cost of roadway equipment of train-control installation, less power lines and power apparatus, and less signals or cost of change in existing signal systems, less salvage....	\$123,338.97
Total cost of changes in existing signal system made necessary by train control, less salvage.....	31,251.25
Total cost of roadway installation.....	\$154,590.22
Locomotive equipment:	
Total cost of locomotive equipment installed, at \$1,204.13 per locomotive, 85 locomotives.....	\$102,351.44
Total cost of installation.....	\$256,941.66

The exception is as follows:

1. Non-equipped locomotives must not be operated in road service in train-stop territory unless double heading behind a locomotive, the train-stop equipment of which is in service. Locomotives with the train-stop device cut out must not be run in road service from terminals in train-stop territory unless double heading behind a locomotive the train-stop equipment of which is in service. When necessary to operate locomotives through to terminals with the train-stop device cut out, account failure enroute, special protection should be provided.



60 Years Development in Motive Power on the Canadian National

No. 6100, the "Confederation," is the New 4-8-4 Type Displayed at the B. & O. Centenary, Used in Heavy Passenger and Fast Freight Service—The "Trevethick," Named for the Inventor of the First Locomotive to Run on Rails (1803), Dates Back Sixty Years on the Old Grand Trunk.

“Reclamation” Carried Far on Canadian National

Activities of mechanical department aid supply forces in reducing locomotive stocks

By George T. Boone,*

General Foreman, Canadian National, Quebec

THE Canadian National, in common with other railways, has taken advantage of every opportunity to effect a saving in operating expenses by reclamation and as a result conducts, through its mechanical department, an unusually extensive operation. This reclamation is taken to include all material reclaimed by welding, also material reconditioned from scrap by rolling, forging and machining, and all trimmings from new materials that would otherwise be sold for scrap, such as pieces of sheet metal, boiler and tank plates.

Welding Cuts Stocks

Locomotive frames are being reclaimed or reconditioned, by both the electric and acetylene processes, to such an extent that it is not necessary to carry new frames in stock as heretofore, and it is seldom necessary to remove frames or do any stripping of frame crossties, splice bolts, etc., in order to effect repairs.

What has been said in connection with frames also applies to other steel castings, such as frame crossties, buffer beams, engine truck centers, guide yokes, back decks, truck frames, truck bolsters, wheel centers, driving boxes, spring seats, brake hangers, chafing plates, floating wedges, crossheads, guide bars, links, valve spools and followers, ash pan hoppers, and stoker conveyor screws, except that in the case of large castings such as buffer beams, engine truck centers, guide yokes and wheel centers, it has been found advisable to stock one or two of each in a semi-finished condition as a protection against emergencies, and also in the case of a few of the smaller castings such as ash pan hoppers or brake hangers that are not expensive and may be required to replace castings that are broken or worn to the extent that reclamation would not be an economy.

The reclamation of cylinders has been developed to such a point that it is rare when a cylinder cannot be reclaimed at a cost insignificant in comparison with the cost of a new cylinder. The present method of using a bronze welding rod has added to the quality of the reclaimed castings and decreased the cost of labor when compared with the previous method of using the cast iron rod. The present practice is to stock a maximum of one pair of finished cylinders for each class of engine, for each region. These cylinders are stored at or near the place of manufacture, subject to call from any point on the system, in case of emergency.

Tons of Grey Iron Eliminated

Superheater header castings often develop slight frac-



The Electric Arc Eliminates Much Buying

tures from the face of the joint to the slot for bolts, which are sometimes hard to locate, even when subjected to a water test, but if the header is heated slightly they can be located readily. If the cracks are numerous it is not advisable to reclaim them. Except in such cases, their repair is an economy and helps to reduce the stock of semi-finished castings.

Eccentrics and straps are often reclaimed by welding with bronze to take up side play and while this may not be economical when effecting repairs, better service is obtained when the cast iron and bronze are running together.

Piston heads and piston bull rings, reclaimed with manganese bronze, give satisfactory results in service. The practice does away with many thousands of pounds of grey iron that would otherwise have to be carried in stock on hand when required.

Engine truck boxes are reclaimed to advantage while engine and driving box cellars are built up to the original width for the purpose of fitting boxes. While the small castings are not so important in reducing stock, the saving in machining and fitting must be considered; especially is this true when reclaiming cellar boxes.

Air pump cylinders are reclaimed if the fracture does not extend through the cylinder wall but the efficient service of air pumps is too important to take the risk of welding fractures that are exposed to steam or to air pressure and extreme temperatures.

Malleable iron tender truck journal boxes for trucks of the pedestal type are reclaimed when worn on the

* From a paper presented before the International Railway General Foremen's Association, Chicago, September 6.

pedestal face at a saving of about 50 per cent of the original cost and give much better service when used in conjunction with cast iron pedestals. It has been found that a spare set of reclaimed boxes for each class is all that is necessary as boxes of this kind can be reclaimed repeatedly.

Expensive Items

Brass driving journal bearings, driving box side plates, side and main rod brasses, crosshead gibbs and engine truck journal bearings are important and expensive items in locomotive repairs, but it is no longer necessary to carry a heavy stock of these as they are reclaimed at little expense with only a slight loss in weight by melting. While it is not advisable to remould important bearings without a careful analysis of the mixture it is always possible to use any surplus scrap brass for repairs to shoe and wedge faces of driving boxes, crosshead gibbs, etc.

Journal bearings are reclaimed repeatedly by relining and machining when necessary.

Inspirator bodies with worn valve seats are built up with bronze and machined to the original dimensions at little expense. As this is the most expensive part of an inspirator it is an important item in stock reduction as it is not necessary to carry any of these in regular stock. This also applies to some of the larger sizes of

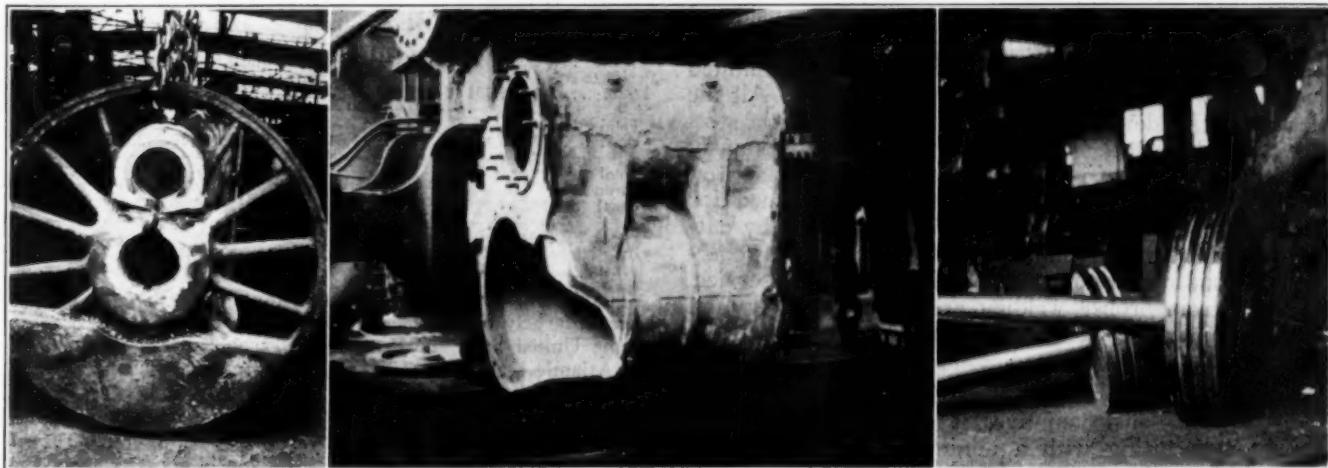
frames are not reclaimed except at pin holes and only when the sectional area is large enough to permit welding to the original diameter without danger of further defects.

Piston rods and valve rods, when worn at the taper fit to crosshead are under-cut, electric welded and machined, but must be annealed before being machined. Eccentric rods are electric welded to take up side play where connected to links.

Eccentric cranks are electric welded at crank pin fits and welded with bronze to the original thickness. Spring equalizers, spring hangers and all small forgings are carried in stock as they are inexpensive and are usually made in quantities large enough to warrant a set-up that will minimize the cost of manufacture.

The reclaiming of boiler and tank plates is confined to the small pieces left over when cutting or machining new plates to layout dimensions. These pieces can be used to cut or machine to smaller sizes for miscellaneous work such as plate washers for bridge work, building construction, etc., that would otherwise have to be cut from stock plate.

The practice of reclaiming tubes and flues by safe ending to a maximum of five welds is standard practice. All two-inch tubes that are of no further service for boilers are used for making steel pilots, instead of using new material. Arch tubes removed on account



Wheel Centers, Locomotive Cylinders and Pistons Are Among the Purchases Which "Reclamation" Has Reduced. Samples of Oxy-acetylene Work

valve seats, valve bonnets, whistle bases, etc., although the expense of carrying a small assortment in stock is not so great.

Forged frame pedestal caps, except where broken, are reclaimed by welding and machining and with few exceptions are eliminated from stock. This also applies to guide bars except where worn to the limit of thickness. Side rods are reclaimed by welding and machining when over-size for knuckle pins and rod brass fits.

Judgment Used

Main rods are reclaimed and machined to the original dimensions where worn at bolt holes, brass and crosshead fits. No welding on broken channel side and main rods is permitted and only a blacksmith weld is allowed on slab side rods. In all cases rods must be annealed after welding except where the bronze welding process is used for the small end of the main rod fit to the crosshead. Spare finished rods are carried in stock chiefly to protect the engine shed requirements. Spring equalizers, spring hangers, brake beams, brake levers and truck

of firebox repairs are used to good advantage for drain pipes at the back of tender tanks.

All short ends of pipes are saved to avoid using stock lengths when short ends serve the purpose for miscellaneous repair work.

Salvage Electrical Material and Tools

All electrical fittings and short ends of conduit are held for miscellaneous work and all copper wire not serviceable is put through a fire to remove the insulation. Some sizes are used for fastening pipe covering and the other sizes are melted or used for other purposes as required.

Drills are reclaimed when worn on the cutting edge by cutting to shorter lengths. Reamers are cut to shorter lengths or ground to the next smaller size as required for special work. Turning or cutting tools, when worn, are shaped to the next smaller size and when worn to a point where this is not practical, are forged to sizes suitable for tool holders. This procedure may not appear economical but the cost of forging is more than offset by reducing the stock of bar steel. Milling cutters in some cases are

ground to smaller sizes or new teeth or cutter blades inserted.

All short ends of new boards, beams, etc., where suitable, are used for miscellaneous work for other departments; also for blocks that are sometimes required for special set-ups in machine operations.

Scrap driving and engine truck axles, when worn to the limit, are machined to smaller standards when possible and when not suitable for this purpose, are used for making cranks, crank pins, piston rods, hub liners, frame pedestals and many other forgings that would otherwise have to be forged from new billets.

Make Tools from Old Tires

Scrap car and tender truck axles having worn collars but otherwise in good condition are reclaimed by the acetylene welding of collars to the original dimensions. Axles worn below the limits on journals are reclaimed to the next smaller size by upsetting the journals, then annealing and machining to standard dimensions. When reclaiming axles or using them for other purposes, a special inspection must be made while hot for the purpose of locating fractures not visible when cold and in all cases, axles and forgings must be annealed before machining, to relieve forging strains.

Scrap tires, when worn to the limit, are used to advantage for many purposes, chiefly for making tools such as chisels, flatters, fullers, swedges, etc. for use in the smith, boiler and erecting shops. No other steel is used for this purpose. This method is usually considered false economy but it is not, as the service of these tools is very satisfactory. The supply of tire steel is unlimited and no new steel is stocked for this purpose. All die blocks and headers are made of tire steel or axle steel faced with tire steel. This is important as it does away with the necessity of purchasing hot die steel. Bar iron with sections not worn or perforated are trimmed for further use. Bolts rough forged are reclaimed by cutting and threading to shorter sizes, nuts that are otherwise in good condition are retapped for further service. Cuttings from bronze welding are made into rods and used for surface work where quality is not an important factor.

Save Glass and Fire Brick

Glass used for locomotives is stocked in sizes convenient for cutting with a minimum waste and small pieces or trimmings are used for electric light shields in cabs, boiler report frames and similar purposes.

Old fire bricks are crushed and used for relining shop furnaces and fire boxes of stationary boilers. They give good service when mixed with fire clay with high temperature cement. This is an economy and reduces the stock of new fire brick.

All hard grease removed from cellar boxes is reclaimed by a simple process that makes it suitable for use in switcher and freight service.

Coal or coke, partly burned from blacksmith fires, is put through stationary boilers, instead of being thrown away. Residue from the gas generator is used chiefly for whitewash at shops and for buildings along the line of road, cattle guards, fences, etc. It is not necessary to carry a stock of lime for whitewash.

Dope or journal packing is reclaimed by hand cleaning or picking, then washed in hot water, pressed and soaked with new oil. The oil removed from this process is reclaimed by separator and filter for use again in freight service.

Packing crates and boxes are reserved for further shipment and stationery forms that become obsolete are turned into the stationery department, to be used for making scratch pads.

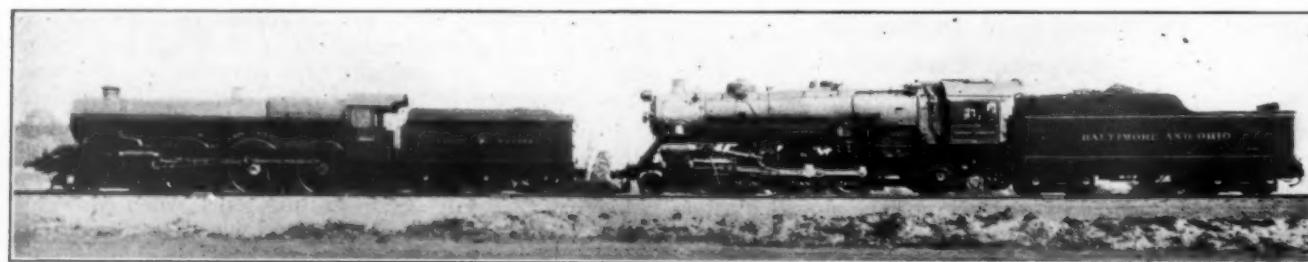
Wire cables removed from cranes are used for making slings for shop use, also for hoists and work equipment.

THE AGGREGATE CARGO passing through the Panama Canal in the United States intercoastal trade increased from 2,518,885 tons for the fiscal year 1922 to 13,614,657 tons for the fiscal year 1924, but decreased to 9,715,442 tons the following fiscal year. Since the fiscal year 1925 there has been an increase again to 10,862,402 tons for the fiscal year 1927. The figures are given in the following table, in which are shown the United States intercoastal cargo tonnage, segregated by direction, the total cargo tonnage through the Canal, and the percentage which the intercoastal cargo was of the total cargo tonnage for each fiscal year.

Direction	Fiscal year, 1922	Fiscal year, 1923	Fiscal year, 1924	Fiscal year, 1925	Fiscal year, 1926	Fiscal year, 1927
Atlantic to Pacific	1,312,554	2,673,521	2,733,075	2,320,159	2,562,991	2,822,598
Pacific to Atlantic	1,206,331	5,525,504	10,881,582	7,395,283	7,679,624	8,039,804
Total intercoastal	2,518,885	8,199,025	13,614,657	9,715,442	10,242,615	10,862,402
Total cargo through canal	10,884,910	19,567,875	26,994,710	23,958,836	26,037,448	27,748,215
Per cent of intercoastal	23.1	41.9	50.4	40.6	39.3	39.1

The total amount of cargo passing through the Canal has been affected largely by shipments of mineral oils from the west coast of the United States. Most of this cargo has been destined to the Atlantic seaboard. As these shipments have fluctuated considerably during the years under consideration, it is necessary to deduct them from the total cargo tonnage in the intercoastal trade to find the growth in general cargo. The difference shown for each fiscal year in the following table is approximately the United States intercoastal cargo tonnage through the Canal for those years, exclusive of mineral oils, and is a better indication of the general growth in this trade than the total intercoastal tonnage shown in the first table:

Year	Total U. S. intercoastal tonnage	Mineral oils from west coast of U. S.	Difference or general shipments
1922	2,518,885	55,838	2,463,047
1923	8,199,025	3,494,405	4,704,620
1924	13,614,657	8,524,837	5,089,820
1925	9,715,442	4,832,766	4,882,676
1926	10,242,615	4,860,799	5,381,816
1927	10,862,402	4,392,682	6,469,720



British and American Locomotives Compared

The "King George V" of the Great Western of England and the "President Washington" of the Baltimore & Ohio in Pageant Array at the Iron Horse Fair, Halethorpe, Md.

"Battle of Systems" in European Electrification

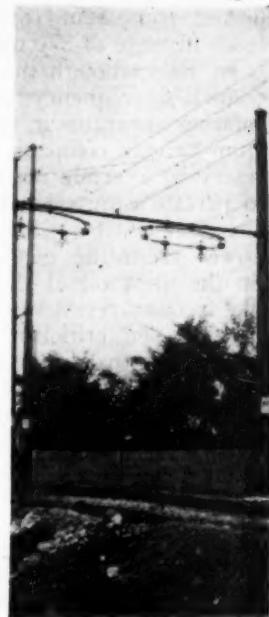
Conclusions reached by different methods are similar to those arrived at by American railroads

By Kent T. Healy

Formerly Cost Engineer, New York, New Haven & Hartford



Single-Phase Overhead in Switzerland



Three-Phase Overhead in Italy

PRECEDING the great expansion of electrification in Europe in the last two or three years it was natural that the different railroads had to decide what form of distribution they would use in their electrification. In most cases this has not been a matter for the railroads alone to decide because the governments of the various countries have been interested in the standardization of systems and in the coordination of the development of the power systems of the countries. Also with a natural view to military needs, the interchangeability of equipment from one road to another assumed an aspect of first importance in the national defense. At the same time, the limitation of the mobility of the enemy in occupied territory by having a system different from his may have had some bearing on the choice of the standard system.

In addition to this, one may note a distinct line of demarcation between the Germanic nations which have chosen the single-phase system, Italy where the three-phase system is in the majority in trunk line work, and the other nations which have standardized on the direct current system. This points to the possibility of a political factor, intangible as it may be, that is playing a part in the choice of system, for the conditions of operation are not so markedly different between these groups, as to call for this difference in systems.

Influence of Sources of Power

The economics of national power systems have entered into the problem of the choice of system in several cases. France, with her usual method of being farsighted in her public utility development, as she so well demonstrated in the consolidation and grouping of her railroads years ago, has frankly faced the electrification problem from the first. She has realized that inter-connection between the different power systems would mean reduction of reserve generator capacity and ability to coordinate her steam and water power to the best advantage. She insisted that whatever type of transmission system was adopted by the railroads should fit in with the comprehensive power transmission system for industry, farms, and homes as well.

This meant then that the transmission lines would have to be three-phase, and of frequency suitable to all uses, which dictated a higher frequency than was suitable to single-phase locomotives. If, then, low frequency was to be used by the locomotives some rotating machinery would be necessary for frequency conversion. If this was the case it was argued why not use rotating machinery to produce direct current and thus get the benefit of the characteristics of the direct current motors and the lack of need for transformers on the locomotives. In addition there was the mercury arc rectifier to fall back on as a non-rotating conversion device.

Holland, too, came to the conclusion that she could best coordinate her power systems by having the railroad draw its power from a common supply. Due to the desire to use multiple-unit cars for most of the passenger service which is largely a short haul frequent service, direct current with substations fed from the common supply seemed to be the answer. In order to have all the lines conform to this standard the Rotterdam-Hague suburban line has been transformed from high voltage single-phase operation to direct current operation.

Sweden, on the other hand, though moved by the same desire to have a national power system for all uses, has standardized on single-phase distribution for railroad electrification. Here the method of attack, once the telephone interference question is settled, was along the following lines. It was obviously necessary to have rotary conversion of some kind if the three-phase national transmission system was to be used since the track distribution had to be either single-phase or direct current. But with the single-phase distribution much higher voltages could be used resulting in a very considerable decrease in the number of substations. In addition to this no commutating apparatus would be necessary, which might be the source of some trouble. But still better was the fact that the spacing of the single-phase substations made possible their utilization as synchronous condensers for voltage regulation of the transmission lines with consequent improved efficiency. The result has been perfect coordination of power supply and loads combined with the saving of the cost of synchronous con-

denser equipment for the transmission lines, over a route mileage of 270 miles.

In Italy, though the State Railroad has many of its own low frequency generating plants, it must have rotating apparatus at several points where it buys power from private companies at commercial frequencies. In reserving a certain percentage of each water power grant to private companies for railroad use, the government has established a policy of buying a certain amount of power from the general power system. This brings up the question of the best way to use this power in the locomotives. Many of the independent engineers have leveled criticism on the present three-phase distribution both because of the need of frequency conversion when buying power and because of the unwieldiness of the overhead system. With a typical searching attitude to find the very best solution for the problem they have built two trial sections with two other possible solutions. One is a 10,000-volt three-phase system at commercial frequency over a line of 110 miles. The other is a 3,000-volt direct current line of 63 miles, similar to those already in use in other countries. But because of the large amount of plant tied up in the three-phase system in the north they have gone ahead extending the electrification there with that system.

In England though there is no trunk line construction demanding large power the principles are pretty well fixed by the Railway Act of 1921 and the Electricity Supply Act of 1926. The first act gives the Minister of Transport power to "require or authorize any railway company or any two or more railway companies on such terms and subject to such conditions as may be specified in the order—to conform gradually to measures of general standardization of ways, plant, and equipment (including methods of electrical operation, type, frequency and pressure of current)." The 1926 act gives the Central Electricity Board the power to require an alteration of frequency in a power plant to comply with their general scheme of frequency standardization provided it complies with the above general requirements of the 1921 act in the case of the railroads. Added to this are general provisions that point to purchase of power by the railroads from a general system or if they should be allowed to erect plants these should be tied in with the general system. As a result of the combination of the London, Brighton & South Coast Railway with the Southern Railway, the single-phase suburban electrification of the former will gradually be transformed into the third-rail direct current system of the latter, as provided for under the act of 1921.

In Germany, Austria, and Switzerland the governments have adopted a contrary policy of wanting to keep the railway supply separate from the industrial network. This has been apparently fostered by the idea that the supply net should be kept as small as possible to keep down the number and magnitude of disturbances, and not to be tied in with other facilities whose troubles will spread to the railway system. In addition there is some feeling that operation will be better when the whole power system from coal pile to locomotive is in the hands of the railroad officials. This then leaves them to choose any frequency or number of phases as far as the generation and transmission plant is concerned. The result is a network of low frequency single-phase transmission lines feeding relatively few simple transformer substations. It has been notable, however, that the Germans, even with their railroad-owned power plants, have chosen direct current third-rail distribution for their suburban lines about Berlin. This may be credited very largely to

the superiority of the direct current multiple-unit car over the single-phase alternating current type.

Differences in Substations

The substations of the various systems are of course basically different. The direct current substations are of three types all necessarily indoors, first with conversion by rotary converters, second, by motor-generator sets, and third, mercury arc rectifiers. All are protected with high speed circuit breakers of one sort or other. The degree of selectivity that is possible with this type of apparatus is remarkable and of great value in keeping service on all but the defective lines. When compared to the protective and fault isolating devices in use at present on the single-phase lines, the high speed breaker plant is very much faster.

The mercury arc rectifier substations have taken vast strides in the last few years. The Midi Railroad in the south of France and the Dutch railroads are the main users at present. The German railroads are making a very large installation of them in the Berlin suburban electrification. From the point of view of power rectification they are entirely satisfactory, requiring less room than rotating machinery and being particularly suitable for automatic operation. The matter of keeping up a vacuum and proper cooling seems to present no difficulties. For a time, however, the production of higher harmonics in the direct current output caused considerable trouble in neighboring telephone circuits. This seems to have been controlled fairly successfully by proper choking and draining of the output circuit. One other disadvantage with the rectifier is that its voltage on the output side cannot be made to have as nice a characteristic as a motor-generator set. It cannot generate its own characteristic but is dependent upon the supply voltage and the drop in its own circuits.

The single-phase substations are most noticeable by their scarcity. For instance the whole network around Munich of about 270 miles has but three substations, the mainline stretch of the Swedish State Railway of 270 route miles has but five, and the final network in Switzerland will have but 20 for 1000 route miles. The simplest of these stations appears in the out-door form now standard in Switzerland. The cost of a typical station of this sort of 18,000 kw. ultimate capacity, and 9,000 kw. present capacity is about \$30 per kw-a. Probably the most interesting of the single-phase substations are those in Sweden where synchronous frequency converters are installed with semi-automatic control. The cost of these stations has run around \$60 per kilowatt. Much is being done to improve the fault isolation in the various single-phase systems to make it equal that of the direct-current.

Influence of Different Overhead Construction

A good deal of competition is evident between the various systems in the overhead construction. The outstanding tendency in the single-phase overhead catenary has been simplification of the construction, following a period in which complexity was accepted as the method of making the catenary flexible and capable of good current collection. This has gotten the costs down remarkably low, Switzerland paying only about \$5,700 to \$6,000 per track mile of catenary and supporting structure. In addition, in yards and places where the speed of locomotives is low and the power to be collected relatively small, there is some tendency toward simplifying the overhead still more and using some form of modified direct suspension to reduce costs still further.

With the direct current overhead system it is not possible to cut down the number of conductors because

they are necessary for conductivity. For example, the Paris-Orleans Railroad running south from Paris has an overhead system composed of two copper contact wires, one copper auxiliary, a bronze messenger, and a large copper feeder. This, of course, means not only a large cost for the overhead itself, but it means much heavier supporting structures. On the other hand the lower voltage of the direct current lends itself particularly well to direct suspension in yard work, because of the simpler insulation problems.

The three-phase overhead distribution system is, of course, a maze of complicated switches and sectionalization. It has gone through various developments resulting in a form of catenary suspension with short spans. At switches and in yard areas the direct suspension still has to be retained to keep the complications within bounds. The operation, however, is quite satisfactory considering the problems involved.

Influence of Telephone Interference

The matter of telephone interference is a matter of great interest as between the various systems, and one which has had a variety of solutions in the various European countries. One of the fundamental reasons for the different solutions has been the decidedly different standards of non-interference expected of the railroad distribution systems. In Sweden the railroads have done more than anywhere else to alleviate the inter-

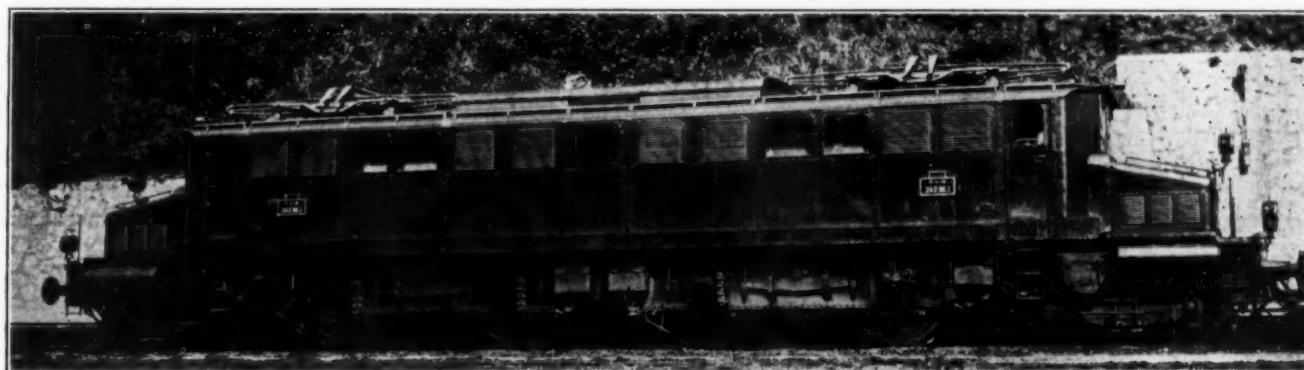
both railroad and general, to about a mile distance from the right-of-way, or cabling, so that the telephone interference problem has its place in this system too. The first cases of mercury arc rectifiers caused trouble, but preventative methods have been devised to overcome it.

Differences in Motive Power

A comparison of the motive power for the various systems is very difficult because the problem of type of drive from motor to wheel enters so much into the locomotive design. The single-phase equipment is somewhat heavier than the direct current, and the three-phase considerably lighter. On the other hand, the control for the three-phase is much more complicated, and in changing from one speed to another the non-pulling period is undesirable. The control for the single-phase equipment seems simpler than that of the direct current though it is not generally equipped for multiple unit control. Beyond this little can be said because of the complications with other problems.

Costs

The costs of the various systems are very difficult to compare because of the varying rates of exchange and the different prices of labor and materials so the following figures must be considered in this light. The Swedish Stockholm-Göteborg (1925) distribution system including overhead contacts and substations cost



A 1500-Volt Direct-Current Passenger Locomotive of One of the French Railroads

ference on the telephone lines. There by means of a return wire and booster transformers the interfering fields created by the railroad have been reduced to a minimum. In addition the communication lines have been cabled, as have the trunk lines of the general communication facilities. This has been done at a cost of about \$10,000 per route mile electrified. In the three other countries using single-phase distribution, namely Germany, Austria and Switzerland, practically nothing has been done by the railroads to reduce the electric field of their distribution circuits. However, all the communication circuits, both railroad and general, have been protected, cabled and placed underground with satisfactory results. Some idea of the cost of this can be gotten from the Swiss costs, where nearly \$10,000,000 has been charged to the railroads for changing communication lines up to 1926. This figure represents 70 per cent of the cost of cabling the railroad communication circuits and 33 per cent of the general circuits. In Germany the cabling of communication circuits is considered an improvement that would have come in the natural course of the development of the companies involved and so is not charged to electrification.

With the direct current systems in some cases the presence of the transmission lines feeding the substations has required the removal of the communication circuits,

about \$18,000 per roadway mile or \$10,000 per track mile. This is divided between five substations averaging \$240,000 and 487 miles of contact and return conductors at \$7,500 per mile. The Swiss costs for a corresponding period have been about \$6,500 per track mile for the distribution circuits including bonding, switching, and supports. The substations have averaged about \$300,000 each or about \$30 per kv-a. This gives an approximate total for the substations and distribution system of \$10,000 per single-track mile. As for the direct current systems, the Spanish Northern (1922-23) cost about \$26,000 per track mile, of which about \$14,000 was over the overhead distribution system. The figure used in estimating the Paris-Orleans electrification economies in 1920 was about \$28,000 per single track route mile, with no subdivision as between substations and overhead shown. These figures are all based on the rate of exchange for the period involved, but even then their value is uncertain.

Conclusions

From all this conflicting evidence there are certain conclusions that can be drawn as to just what status the various systems for electrification have in Europe at present. Certainly direct current in some form is

favored for all cases of what would correspond to the American classification of suburban electrification. All the electrification of the London, Paris and Berlin suburban traffic is direct current, the latter country choosing it even though alternating current is the standard for trunk lines. The Dutch electrification is best classed here too.

When it comes to mixing suburban and main line traffic the Paris-Orleans has preferred to extend the direct current out on the trunk lines. The German Federal Railroad, on the other hand, has seen best to change to alternating current for the trunk lines. Here the difference in choice rests largely upon two facts, first that one country wants to use power from the general systems whereas the other is determined to have the railroads generate their own power; and second that the attitude toward inductive interference is forbidding in the one country and not in the other. When it comes to pure main and branch line operation where the railroads have been free to choose, the result has been single-phase distribution, as the electrifications in Austria, Switzerland and Sweden show. In these three cases the attitude toward source of power and toward inductive interference varies between the two extremes, yet the same conclusion is reached as to the single-phase system.

are to be used behind 2-8-8-2 type articulated compound locomotives having 57-in. diameter drivers, 25-in. and 39-in. by 32-in. cylinders, and a boiler steam pressure of 240 lb. These locomotives develop a tractive force of 101,300 lb.

The general design of these tenders is similar to the 15,000 gal. capacity and the 16,000-gal. capacity tenders which have been used on the N. & W. for a number of

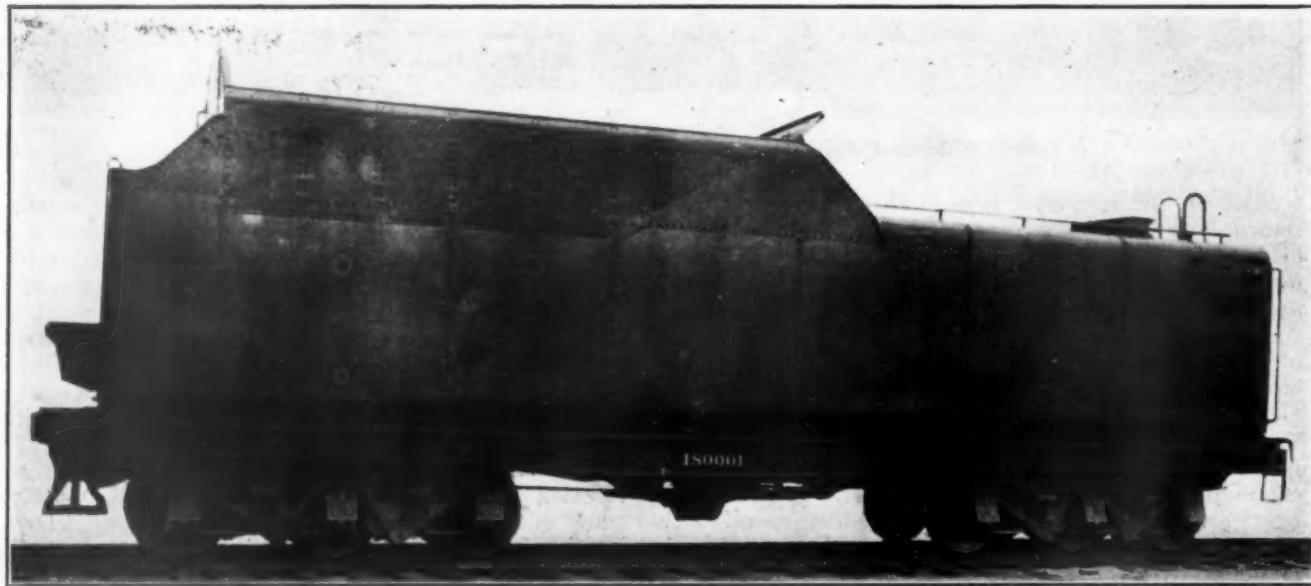
Water capacity of tender	15,000 gal.	16,000 gal.	18,000 gal.
Coal capacity.....	20 tons	23 tons	26½ tons
Length from face of buffer to coupler face	40 ft. 9¾ in.	40 ft. 9¾ in.	44 ft. 10¾ in.
Truck centers.....	22 ft. 11¼ in.	22 ft. 11¼ in.	26 ft. 9¾ in.
Truck wheel base..	9 ft.	9 ft.	9 ft.
Height from rail to top of coal board.	15 ft. 4¾ in.	15 ft. 4¾ in.	15 ft. 4¾ in.
Length of cistern, inside	36 ft. 5½ in.	36 ft. 5½ in.	40 ft. 3 in.
Depth of cistern, inside	7 ft. ½ in.	7 ft. 8 in.	7 ft. 8 in.
Width of cistern, inside	10 ft. 5½ in.	10 ft. 5½ in.	10 ft. 5½ in.
Height from rail to top of filling hole.	11 ft. 4¾ in.	12 ft. ¾ in.	12 ft. ¾ in.
Light weight, tender complete	106,200 lb.	107,200 lb.	110,800 lb.
Loaded weight, tender complete.....	271,200 lb.	286,530 lb.	312,800 lb.

years. The additional capacity for the new tenders was obtained by extending the wheel base 3 ft. 9½ in., which also permitted lengthening the cistern the same distance. The additional fuel capacity was obtained by moving the slope sheet to the rear and raising the height of the coal boards.

The dimensions and weights given in the above table show the increase that has been made in the size

N. & W. Builds Tenders of Large Capacity

THE Norfolk & Western has recently completed the first of 30 tenders at its Roanoke, Va., shops which have a water capacity of 18,000 gal. and a coal capacity of 26 tons. The tenders are scheduled to



First Tender Completed of an Order of 30 Being Built by the Norfolk & Western at Its Roanoke, Va., Shops

follow at the rate of one each week until the entire order is completed. These tenders are the largest in the service of this road and, with a few exceptions, the largest tenders in use on any road in this country. They are of water leg construction and are carried on 6-wheel trucks of Norfolk & Western design having 33-in. diameter wheels with 6-in. by 11-in. journals. The total weight loaded is 312,800 lb. It is understood that they

of the tenders used on the Norfolk & Western since 1923, when the 15,000-gal. capacity tenders were first placed in service.

THE CHICAGO GREAT WESTERN has placed the name "The Legionnaire" on the tenders of the three locomotives pulling this train between Chicago and St. Paul, Minn., and Minneapolis. The name appears in gold letters on a royal blue background.

Norfolk Southern Progresses

Has reported increased traffic and improved earnings in each of past several years

THE Norfolk Southern is continuing this year in very fair degree the improvement in its operating results that it has been showing in each of the past several years. In no year since federal control has the road failed to show improved net income or increased earnings per share as compared with the year immediately preceding. It had a deficit in 1921, earned 68 cents a share in 1922, \$3.20 a share in 1925 and \$5.08 a share in 1926. A comparison of the earnings for the first seven months of 1927 with the comparable period of last year follows:

	1927	1926
Railway operating revenues.....	\$5,749,710	\$5,805,709
Railway operating expenses.....	4,021,716	4,065,243
Net revenue from operations.....	\$1,727,994	\$1,740,466
Railway tax accruals.....	365,570	353,500
Railway operating income.....	\$1,361,033	\$1,383,962
Net railway operating income.....	1,101,700	1,081,066

The Norfolk Southern has only one issue of stock outstanding. The price of this has had a range this year between 37½ and 64½ and is now about 54. In 1921 the stock sold at one time as low as 8½. There has been some talk that the road may soon find it possible to pay dividends but the present price of the stock seems less to represent such an expectation than a reflection of the progressively bettered earnings, the steady increase in the road's traffic and the improved operating results. The present company dates back to 1910. An initial quarterly dividend of ½ per cent was paid in January, 1911, giving a rate of 2 per cent annually which was maintained up to January, 1914, but no dividends have been paid since.

Mileage

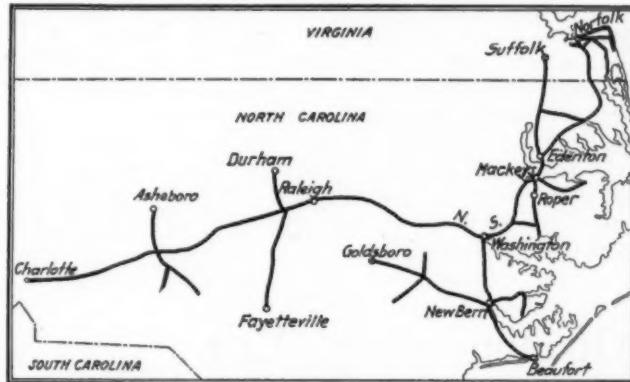
The Norfolk Southern is controlled by Ernest Williams, chairman of the company's board of directors, and by the American Tobacco Company, although it is not known whether these interests have a majority control. The company has a total of 932 miles of line of which 42 are operated electrically. Its most important line is from Norfolk, Va., via Washington, N. C., and Raleigh to Charlotte, in addition to which there is a line from Washington to Beaufort, N. C., and a rather extensive branch line development throughout most of the territory and particularly along the irregular coast line of North Carolina. One of the important branches is the line to Durham, N. C., formerly known as the Durham & South Carolina, which was acquired in 1920 and which is regarded as having particular value because it gives the road entrance into the important tobacco center. The electric lines do a substantial tourist or resort business, particularly to Virginia Beach.

Development of Property

The Norfolk Southern was formerly chiefly a lumber road. At one time over half of its tonnage was products of forests, such as in 1910 when the percentage was 55 per cent. The company still owns all of the outstanding shares of the John L. Roper Lumber Company which at one time owned 600,000 acres of land and is still said to own 425,000. The company has mills at Newburn and Roper and still has much valuable standing timber. However, as the timber has been cut off,

the land has gradually been made available for agriculture and has assisted in giving the Norfolk Southern a more diversified traffic. Furthermore, the road has benefited greatly from the prosperity with which North Carolina has of late years been favored.

In an earlier period of its history the Norfolk Southern extended only to Raleigh and at that time about 95 per cent of its traffic was originated or delivered on its own line or on connecting short lines. Later the line was extended to Charlotte and in August, 1920, a traffic arrangement was made with the Southern Railway whereby through rates and divisions were estab-



The Norfolk Southern

lished through Charlotte between points in the North and East and points to the South, southwest and southeast of Charlotte in Southern territory. As a result the road has had a steady increase in its traffic and this explains largely the progressive improvement that it has been enabled to report as each year has passed.

Growth of Traffic

The revenue ton-miles in 1926 showed an increase of 25 per cent over 1923, of 19 per cent over 1924 and 13 per cent over 1925. The Norfolk Southern has not yet secured sufficient traffic to give it a very large traffic density as is shown by the figure of 553,106 tons carried one mile per mile of road in 1926. The road received average receipts of 1.681 cents per ton-mile which compared with the average for the Southern region in 1926 of 1.079 cents; it carries very little coal. The classification of its traffic in 1926 with a comparison for the year ended June 30, 1916, follows:

	1926	1916
Products of agriculture.....	11.86	10.00
Animals and products.....	0.37	0.7
Products of mines.....	39.75	24.6
Products of forests.....	22.35	42.3
Manufactures and miscellaneous.....	21.61	13.8
L. c. l.	4.06	8.6

The most important group under products of mines is the item of stone, sand and other like articles which in 1926 totaled 32 per cent of the total tonnage and represented by far the largest single item of traffic. The traffic in this group has more than doubled in the last four or five years. It is of interest with reference to the lumber traffic, that although the percentage of

this group declined from 42.3 in 1916 to 22.35 in 1926, the actual reduction in the tonnage was only 3 per cent. The Norfolk Southern has been handicapped more than most other railroads in the loss of passenger business. Its revenue passenger-miles in 1926 were 15 per cent less than in 1925 and 41 per cent less than in 1923. Fortunately, the increase in the freight business has been sufficient to compensate for this.

Increase in Net Operating Income

It was noted above that the Norfolk Southern in 1926 earned \$5.08 a share on its common stock as against \$3.20 a share in 1925. Its net railway operating income for the year, \$1,786,087, was the best in its history, which compared with \$1,508,456 in 1925, thereby showing an increase of 18 per cent. In similar fashion the net operating income showed an increase over 1924 of 26 per cent and over 1923 of 30 per cent.

One of the striking features of all of the Norfolk Southern figures is that they have shown a progressive improvement in each year since federal control. The question now is, of course, as to whether the improvement will be carried into 1927. The road had a falling off in its net railway operating income in July but it was one of the few roads of the country that succeeded in showing an increase in its railway operating income for the seven-months period.

From other points of view the road's operations are not particularly spectacular. In 1926, however, it had an operating ratio of 70.91 and a transportation ratio of 36.09 which compared with 1925 figures of 73.22 and 38.90, respectively.

Opening of the "Fair of the Iron Horse"

THE Baltimore & Ohio's "Fair of the Iron Horse," the exhibition and pageant being given by it at Halethorpe, near Baltimore, in celebration of its centenary, opened auspiciously on September 24. The pageant being presented outdoors, good weather was needed for a favorable opening, and the weather was perfect. The crowd in attendance on the

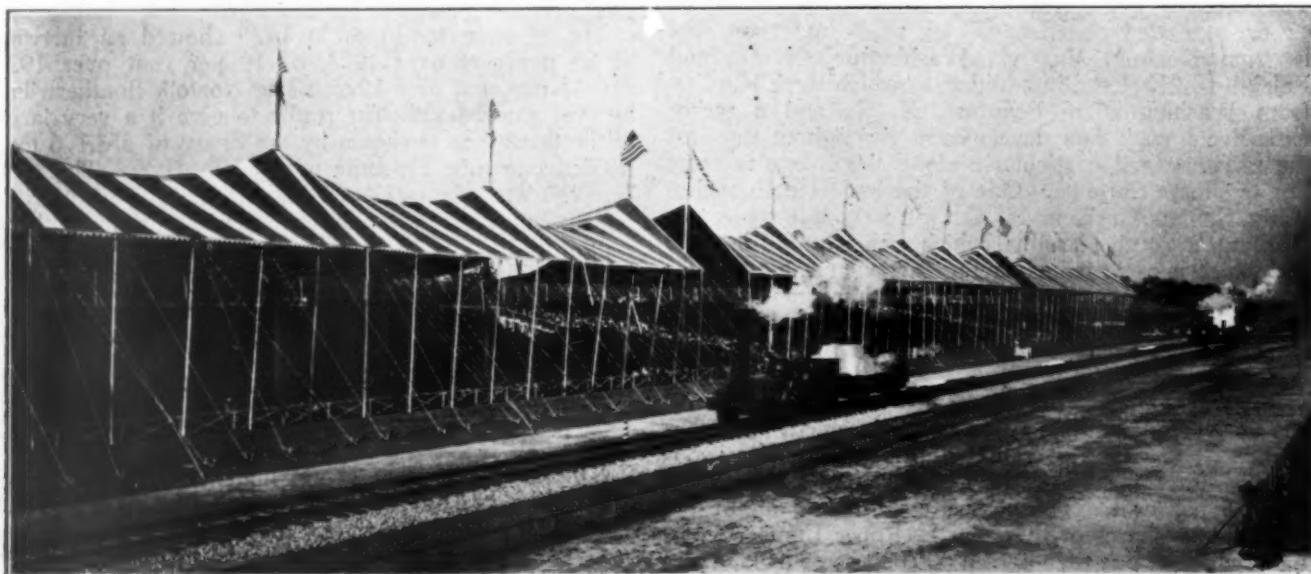
first day exceeded 38,000. It began to arrive early in the morning, and as the exhibition, which was fully described in the *Railway Age* of September 24, page 555, is intended for the education and entertainment of the public, the officers of the railway naturally felt a good deal of curiosity as to the interest the public would take in it. This question was answered in the most favorable way, the keen interest shown by men, women and children being unmistakable.

The fair was formally opened at 2 p.m. by President Daniel Willard, who, in a brief address, outlined what had been and was being done, and the reasons for it, and introduced Governor Ritchie of Maryland. Mr. Ritchie also made a brief address, touching upon the history of the Baltimore & Ohio and of its relations with the city of Baltimore, and congratulating the management of the railroad upon its success in putting the property in its present good physical condition, on the service being rendered by it and on the gratifying financial results being secured.

The pageant, which also was fully described in the above mentioned article in the *Railway Age* of last week, then began to move, and it was followed with great interest by the large crowd which filled the grandstand and overflowed into the grounds along the highway and the railway tracks, over which different parts of the pageant moved.

The exhibition and pageant will be continued until October 12, and developments up to this time are a token that their success will be equal to the most optimistic anticipations of the railroad's management. The two days following the opening day fell on Sunday and Monday, which are the two days of the week on which the pageant is not shown. On Tuesday, September 28, when the pageant was given for the second time, attendance amounted to 68,000, almost doubling the attendance on the opening day. By Wednesday a total attendance of more than a quarter of a million had been recorded.

A RATE OF 112.86 MILES AN HOUR for 27 hours, 30 minutes, 40 seconds, is reported as the speed made in an automobile near Paris, France, on September 26 and 27. Three drivers alternated at the wheel of the car. The distance covered was 5,000 kilometers, or 3,107 miles.



The Pageant in Progress

Are Accounting Reserves Sound?

What does the railroad accounting department think about depreciation reserves—A reply to Professor Riggs

By E. J. Greaney

Assistant Treasurer, Oahu Railway & Land Company

THE purpose of this article is to attempt to answer, from a railroad accountant's viewpoint, the question raised by Professor H. E. Riggs in his two articles in *Railway Age*.* He asks, "Are accounting reserves sound?" and, although recognizing the differences between industrials and public utilities and between large and small public utilities, he reaches the conclusion that in general accounting reserves are not sound.

The problem of carrying out the Interstate Commerce Commission's Order No. 15100 is one that will require the combined efforts of railroad engineers and accountants. There ought to be an approach toward unanimity of opinion as to the soundness of accounting reserves. The writer will venture to say that nearly all railroad accounting officers who are qualified to express an opinion, if they were uninfluenced by conditions on their own road as they now exist and as they existed in the past, would disagree with Professor Riggs' conclusions.

Suppose a new road were being constructed in a territory where adequate return on the investment was assured, where no unforeseen physical obstacles delayed completion beyond the estimated construction period and the road was put into operation surrounded by favorable circumstances with respect to way and structures, equipment, finances and personnel. How many accountants given the job from the beginning, of installing and supervising an accounting system under these conditions, would fail to provide and maintain depreciation reserves? It would seem that if a large majority of railroad accountants would favor depreciation reserves in a case like this, it would give weight to the argument that carrying depreciation reserves in the books is sound in theory.

Surrounded by reasonable rules according to accepted accounting principles, depreciation reserves can be made sound in practice. Some of the rules in Order No. 15100 are not reasonable nor according to accepted accounting principles. Some of them are radical and extreme and have not stood the test of usage. Granting that, the order still has in it great merit. Its going into effect—with some changes, it is hoped—will bring about uniformity in way and structures depreciation. Leaving the matter of writing off depreciation on way and structures or not, to the discretion of the individual railroads, while making equipment depreciation mandatory, was a mistake that should have been rectified long ago.

In exercising, as it does, such close supervision over the accounts, the commission should leave no option to the railroads in the matter of writing off depreciation on any group of assets. Either all railroads should write off depreciation or none should. Their option should be limited to a choice of rates only.

In the case of two large railroads both having a large number of units in each property classification, one using the depreciation method consistently and the other handling its retirements, replacements and re-

newals in such a way as to equalize the absence of depreciation charges in its operating expenses, their different methods will not necessarily distort their operating statements and operating ratios for comparative purposes. In the case of two smaller railroads, however, even those in Class I, each following a different method, unquestionably their operating expenses are not comparable, nor should they be lumped for statistical purposes. The two large railroads are comparable only because the large number of property units being retired, replaced and renewed year after year has an equalizing tendency. This is not true of the two smaller roads.

The federal income tax bureau for several years has taken the stand that way and structures property taken as a whole does not depreciate in value and that it is as valuable at the end of any given year as it was at the beginning. Some railroad officers agree with this contention. What is really meant though, so far as these railroad officials are concerned, is that the accounting on their own particular road is handled in such a way that the depreciation that does take place in the individual units of property is offset by the additions, betterments, replacements and renewals. It cannot be denied that individual units of roadway property depreciate in capacity, in efficiency and in value. And what is true of the parts of the whole is true of the whole.

Large Units of Property

Consider what happens in the accounts when no depreciation reserves are used. There are many roads that have one or two costly bridges, for instance, and a great number of smaller ones. When a costly bridge reaches the end of its useful life and is to be replaced, there being no depreciation reserve against which to charge off the book value, it will be charged into operating expenses in the repairs account, as there is no separate retirement account under maintenance of way and structures. Such an item is bound to distort the operating expenses for the year in which it is retired.

With the permission of the commission this distortion may be avoided by carrying part of the item along in suspense to be distributed over the operating expenses of future years. But this is only a makeshift to make the future revenue stand the cost of an asset which was worn out in earning revenue of the past. The point may well be taken that as an offset, the future years will not be charged with depreciation on the new bridge. That is true, too, but the new bridge will be in use a greater number of years than the cost of the old one is distributed over.

If the old bridge is retired but not replaced, its full book value, under the classifications, would have to be charged to profit and loss, i.e., to surplus, and would not appear in the operating expenses of any year.

In the absence of depreciation reserves, the cost of a new structure can be charged direct to operating expenses without making any change in the property accounts; or if the new structure is of superior construction, the property accounts can be charged with the

*"Are Accounting Reserves Sound," *Railway Age* of May 14, 1927, page 1461, and May 28, page 1589.

excess cost of the new structure over the estimated cost of a structure of the same construction as the old one, the estimated cost being charged to operating expenses. This method will not only distort the operating expenses but the property accounts as well. The result is to have the new structure carried at what the retired structure originally cost if of the same construction or at a combination figure made up of the original cost of the old structure plus the excess over the estimated cost in the case of a replacement by a superior structure.

These distortions are present in the accounts of every railroad, large and small, that fails to accrue depreciation, but they are hidden from view in the accounts of large railroads by the volume of transactions and the large number of individual units of property represented in the accounts. Professor Riggs lays great stress on the equalizing tendencies in the case of large roads but offers no alternative for the smaller roads.

It would be well to consider what conditions must exist to make the equalizing tendencies work out. If a station building has a useful life of 25 years, one twenty-fifth of its cost should be charged to each year it is in use. Obviously if exactly 25 station buildings of exactly the same cost are owned and one of them is retired and replaced each year, the same effect in the operating expenses is secured by the so-called retirement method as by the depreciation method, since the cost of one building is the same as the sum of one twenty-fifth of the cost of each of them.

To expect such exact conditions to exist in practice is absurd; yet when they do not exist there is bound to be distortion and inaccuracy in the accounts. From the standpoint of accuracy and truth in the operating statements and balance sheets the arguments in favor of the retirement method are weak.

The merits of accounting for depreciation by means of reserves are many and varied and when their use is followed consistently and supported by reasonable rules in operation and by adequate property records, they provide accuracy and uniformity impossible of attainment by any other accounting expedient.

Accounting Distinctions

Professor Riggs emphasizes the distinction between the accounting phase of depreciation and the valuation phase for rate-making and other purposes. He defines the accounting phase as "an accounting device to distribute certain operating expense charges uniformly over a year or a period of years." The accountant's conception could be better stated as: Depreciation is an operating expense caused by the shrinkage in value of physical assets resulting from wear and tear in operating use, the amount of which is determined to be a portion of the cost or book value of the assets. It doesn't take an "accounting device" to distribute the operating expense.

The depreciation reserve is the accounting device and might be defined as: An account set up in the books to which are credited the amounts which are concurrently charged to operating expenses for depreciation. To be precise, the depreciation reserve is only half of an account. It is the credit side of the asset account or accounts for which it is intended to accumulate the periodical shrinkages in value. It is not and should not be used as a place in which it is convenient to charge retired assets, or replacements or in fact any thing else. (The failure of the order of the commission to recognize this is its worst feature and the one that will cause the accounting records to go still further astray as a true measure of values.) The only charges or debits which should ever be made in the depreciation reserve—except, of course, correction entries—are those necessary upon

retiring an asset or a part of an asset to transfer so much depreciation as has been accrued, to the credit side of the account of the asset being retired.

The elementary bookkeeping principles involved in depreciation accounting are so often lost sight of in considering its broader aspects that they should be reiterated occasionally. A great deal of the misunderstanding, confusion and condemnation of depreciation accounting is caused by losing sight of these basic principles.

The part of the usefulness of physical assets—called depreciation—consumed in earning the gross revenue in any year is in every sense an expense or a cost of producing that revenue just the same as the fuel used in the locomotives or the labor used in maintaining the roadway. The money value of the combination of skill, labor and material put together in a unit of property to help to produce the gross revenue should be charged against the revenue of the years in which it is used up just the same as the money value of the skill, labor and material used up in operating the locomotives that haul the freight and passengers.

Depreciation an Expense

Depreciation is an expense that differs in only one way from any other expense. It is paid for in cash like all other expenses; but differs only in the matter of the *time when* it is paid for. The other expenses are paid in cash currently; the physical assets, the costs of which constitute depreciation, are paid for before they are used. Because of this, when the amount of the depreciation expense is debited to operating expenses to result in a charge against current revenue, the credit is *theoretically* made against the asset which pays the depreciation, i.e., the physical asset in which the cash is tied up, instead of being credited against the cash account as in the case of the other expenses. *Actually* to make the credit in the property account would reduce it to a balance representing its then value. Its original cost would be hidden as well as the amount of depreciation charged off on it since its purchase. To avoid hiding these important facts—and for that purpose only—the depreciation reserve was originally intended.

To the extent of accumulating depreciation credits it is the credit side of the asset account and nothing more. When the asset reaches the end of its useful life and is retired, the total amount of the credits in the reserve is transferred over to the credit side of the asset account from which the credits were withheld while the asset was being used up. In making the entry on the books for the retirement of the asset the accountant usually makes one entry instead of the two or three entries that would more clearly record the transaction, but nevertheless the part of the entry which appears as a charge against the reserve is merely the transfer of the accumulated credits. Whether or not a new asset takes the place of the old has no bearing whatever on the principles outlined.

These principles certainly are theoretically sound. Not following them strictly in practice and failing to keep adequate property records whereby they can be followed is what should be condemned as unsound by accountants, engineers and regulatory bodies having the best interest of the industry, investors and the public at heart.

The writer has attempted to show that it should be mandatory upon all railroads to adopt the same method; that the retirement accounting method distorts the operating expenses and operating ratios and results in charges against revenues of years or periods in which they do not rightfully belong; and that the depreciation accounting method is sound at least in theory. It ought to be possible for the accounting officers of every large

and small railroad to devise ways and means of making it sound in practice in their own accounting systems. It has been done in other industries. The commission thinks it can be done by all railroads. It has already been done by many of them.

The 186 railroads listed in the back of Order No. 15100 include 34 railroads, large and small in all sections of the country, which account for depreciation on practically all or on certain units of ways and structures. These roads, in exercising their option, adopted depreciation reserves and must have considered them sound in practice, even if the attitude of the income tax bureau in not permitting depreciation on ways and structures as an allowable deduction from gross income for tax purposes must have been an influence against their use.

It was stated by Professor Riggs that the only reason in the world for the adoption of reserves in practice is to equalize expenses in the different fiscal periods, in order that the ratio of operating expenses to gross earnings may be kept free from violent fluctuations. It would be nearer the mark to say that depreciation is charged to operating expenses in order that each fiscal period may bear its proportionate part of the cost of the asset used up, thereby keeping the operating ratio free from violent fluctuations. It is the proportionate charges to operating expenses that accomplish that, not the reserves. As said before, the reserves merely collect the credits until the asset being depreciated is retired from service. The reserves are not essential but they do serve a definite purpose.

Since the depreciation expense is paid for in physical property—which in turn was paid for in cash when acquired—and the gross revenue against which it is charged comes in as cash, an amount of money equal to the depreciation charge is placed in the treasury in excess of the net income. If each of these amounts were kept intact and earmarked, the railroad, upon retirement of the unit of property, would have in money a sum equal to the original cost of the unit retired. This sum would then be available to purchase the replacement. The railroad, however, being a continuing property, finds it unnecessary to earmark the money by creating a depreciation fund. It therefore uses this money without regard to its source for any purpose it sees fit. It will or will not require new capital for the replacement according to the condition of its cash account at the time the replacement is needed regardless of how it keeps its accounts.

Using the depreciation accounting method, the cost of the replacement is a proper charge to the property (asset) accounts, whether new capital is required or not. What chance would even a fairly prosperous railroad have of borrowing money or getting it by the issue of stock if the investing public knew that the cost of the property to be acquired with it was to be charged to operating expenses as a replacement?

Professor Riggs' view that a statement of operating expenses and revenues in which depreciation accounts appear is a schedule of estimates is too broad an indictment to be taken seriously. It should be remembered that the cost of a unit of property is an actual figure ascertainable from the records and in depreciation accounting that cost is the amount chargeable to operating expenses. Experience must be relied upon to apportion the cost to the different fiscal periods. Whether the apportioning is absolutely accurate or not, it all gets into operating expenses finally. The equalizing effect of volume transactions comes into play here to a much better advantage, in the case of small railroads as well as large ones, whereas in the retirement method it covers up the distortions (but does not eliminate them) in the case of large roads only.

Looking Backward

Fifty Years Ago

J. A. Edson of Evanston, Wyo., has been appointed chief train dispatcher on the Union Pacific at Laramie, Wyo.—*Railway Age*, October 4, 1877.

Nearly every model relating to railways, wood-working machinery, metal-working machinery, bridges, car couplings, brakes, journals, bearings and excavators was destroyed in a fire at the Patent Office at Washington on September 24.—*Chicago Railway Review*, September 29, 1877.

The track of the Canadian Pacific is now laid to the Oscondago river, 47 miles east of Port William, near Thunder Bay. The road is under contract from Fort William westward to English River, 113 miles, and from Selkirk on the Red river eastward 114 miles to Keewatin on the Winnipeg river. It is expected that the gap of 180 miles will be filled for the present by boats over the English river and its connecting lakes and streams.—*Railway Age*, October 4, 1877.

Twenty-Five Years Ago

Fearing that the coal strike, which has now lasted for more than five months, may not be settled within a reasonable time, the Boston & Maine has placed orders for several thousand cords of hard wood cut to stove length. The company has decided to burn wood in all stations along the line this winter.—*Railway and Engineering Review*, October 4, 1902.

The Southern Pacific has announced its intention of constructing a new freight terminal on 50 acres of water front land on the east shore of San Francisco Bay. A mole will be built and from the water end of this mole three piers will extend out to deep water. This terminal with its freight ferries is expected to save 9 miles in hauling freight between San Francisco and Point Richmond.—*Railway Age*, October 3, 1902.

Another step in the consolidation of railroad interests was taken this week, when arrangements were made for transferring to the Atlantic Coast Line, ownership of a majority interest in the outstanding \$60,000,000 capital stock of the Louisville & Nashville. The Atlantic Coast Line, operating the Louisville & Nashville, will now share with the Southern, control of the north and south traffic in the territory south of the Potomac and Ohio rivers and east of the Mississippi river.—*Railroad Gazette*, October 3, 1902.

Ten Years Ago

Increased wages and improved working conditions have been granted to enginemen, firemen and hostlers on the western lines of the Canadian Pacific. The increases approximate 10 per cent on the minimum rate for passenger service.—*Railway Age Gazette*, September 28, 1917.

Reports received by R. H. Aishton, chairman of the central department committee of the railroads' war board, show that since the beginning of the war the reduction in passenger train service in 15 states has been equivalent to removing each year 1660 men from the payroll, saving 989,000 tons of coal, 203,000 barrels of oil and 320 locomotives.—*Railway Review*, September 29, 1917.

The Michigan Central, the Chicago, Rock Island & Pacific, the Chicago & Alton and the Chicago, Burlington & Quincy, in contrast to the action of other roads in the same territory, have demanded blanket exemption from military service for locomotive engineers and firemen in their employ. The roads take this position in the interest of continued war efficiency.—*Railway Review*, September 29, 1917.

Communications and Books

Points for the Ambitious Freight Agent

CLEVELAND, OHIO.

TO THE EDITOR:

An open acknowledgment of shortcomings usually creates confidence and this applies to railroad traffic officers as well as other people. To bluff or try to cover up creates distrust and antagonism. To show an honest effort to help a shipper or receiver will establish a standing that will bring about the much desired co-operation.

Officers of railroad lines have done much good work recently, but let us not fail to give due credit to the officers of the American Railway Association for the improved car service now being rendered. Their activities have brought about a great improvement in car supply, increased loading, increased miles per day per car and better relationship between the public and the railroad companies. In their efforts they are supported by the railroads—quite a contrast to conditions existing a few years ago. They have the respect of the public because they have been fair and helpful in their dealings. They have been greatly assisted by the shippers' advisory boards. These organizations have brought the shipper in closer contact with the railroad men, resulting in real co-operation. Notwithstanding all this, there is plenty of room for improvement.

Courtesy Always—Now, as always, a great deal depends on the intelligence displayed by agents, yardmasters and clerks in their dealings with patrons. Indifference in listening to complaints, short answers, unsatisfactory information, attempts to shift responsibility, and numerous other well-known weaknesses tend always to neutralize the constructive work being done by the executives.

Tracing—Tracing cars from originating point to final destination is one of the aggravating problems confronting the carrier. To tell the shipper that his freight has been delivered to a connecting line within reasonable time, indicating that that is the end of your responsibility, is irritating and very unsatisfactory to him. The tracing should be carried through by the originating line; that line should be vitally interested in the delivery, and owing to each road being in close touch with all cars moving, can, with very little additional work, complete the tracing; while the shipper, if he tries to trace, is obliged to get in touch at quite an expense and delay with two or more lines. I recall cases where the shipment had been delivered a week before answer was received by the shipper to his request to trace. Tracing cars must generally be done by telephone and telegraph. How can this be done at reasonable expenditure of time and effort? Passing reports are used to a great extent; but at best much time and expense will be involved. Shippers request tracing before cars start moving and expect to be advised what time the car is making throughout its journey. Why not a rule that only delayed cars shall be traced? It is more difficult to trace I.C.I. shipments traveling over two or more lines, but of course small shipments, upon request, must be given the same attention as larger ones. Consideration could be given to the adoption of some uniform system of carding that would simplify the tracing of I.C.I. shipments. It would not be out of place to submit this question to the advisory boards for discussion. As above suggested, no amount of bluffing will take the place of real consideration of the shipper's needs.

Special Attention to New Neighbors—A new industry locating on our line becomes at once one of our institutions and should be made an asset. This can be done by extending a helping hand in every way possible. If the concern gets into trouble, we should interest ourselves sufficiently to show our good will. It is in large terminals that most of our troubles arise. All the different roads should energetically co-operate in seeing that good service is rendered. The former practice of delaying cars purposely because a competing line had secured the business is discreditable and detrimental to the road resorting to such tactics; and it is a reflection on all transportation companies.

Embargoes—Embargoes can often be avoided by a frank conference between the railroad representative and receivers of freight looking to measures to expedite unloading. Releasing equipment at times when badly needed avoids congested yards and this will mean reduced switching expense. It is well-known that embargoes should be avoided wherever possible, and at the first indication of accumulation some action should be taken, as embargoes are far-reaching in their effect, to shipper, consignee and railroad revenues. They increase the cost to transportation companies and congest yards and sidings. A little help and suggestion on the part of terminal officers would in many cases avoid in a great measure an expensive and unnecessary condition.

H. O. DUNKLE.

Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

Books and Pamphlets

Automotive Transportation and Railroads—A Study of Relationship Between Highway and Rail Transport, by Committee on Commerce and Marine, American Bankers Association. Taxation, traffic, regulation and other important factors discussed. 83 p. Pub. by American Bankers Association, New York City. Apply.

The Baltimore & Ohio Railroad Company and Its Subsidiaries—A Bibliography, compiled by Edmund A. Freeman. References indicating material on history of the railroad. 378 p. Pub. by Library, Bureau of Railway Economics. Apply.

Coal and the Norfolk & Western Railway. This "bit of history and geography" with its accompanying map and illustrations will interest students of geography as well as railroaders. 24 p. Pub. by Coal Traffic Dept., Norfolk & Western Railway, Roanoke, Va. Apply.

Feeding the Iron Hog—the Life and Work of a Locomotive Fireman. An illustrated account of the work of locomotive firemen together with a sketch of the organization of the Brotherhood of Locomotive Firemen and Enginemen. Foreword signed by President Robertson of the Brotherhood. 100 p. Pub. by Brotherhood of Locomotive Firemen and Enginemen, Cleveland, Ohio. 25 cents.

Railroad Map of the United States, prepared under direction of Chief of Engineers, U. S. Army. Edition of 1927 published in four sheets which when joined form a wall map 7 x 5 feet. Single, multiple, and narrow-gauge track sections are indicated with notes on trackage rights and other important data. Published by Engineer Reproduction Plant, Washington Barracks, Washington, D. C.

Periodical Articles

La Fissuration Superficielle des Rails en Service. Technique d'étude des Rails Fissurés, by A. Portevin. Illustrated article on results of recent studies of transverse fissures. *Revue Générale des Chemins de Fer*, September 1927, p. 263-275.

The Hudson River Vehicular Tunnel—A Big Problem of Ventilation Requiring Nearly Four Million Cubic Feet of Fresh Air Per Minute, by J. Bernard Walker. Illustrated. *Scientific American*, September 1927, p. 201-203.

Ice That Melts to a Gas, by D. H. Killefer. Solid carbon dioxide and its application to refrigerator cars. Illustrated. *Scientific American*, September 1927, p. 220-222.

The Washington-New York Service of the Baltimore & Ohio Railroad, by Paul T. Warner. An illustrated history of the development of the service and the motive-power required. *Baldwin Locomotives*, October 1927, p. 8-20.

Odds and Ends of Railroading

Even locomotives have to give service with a smile, writes H. E. Cartwright. The other night an engine failure occurred caused, according to a report given by one of the passengers, by a broken "giggle pin."

The young Hills seem to be determined to enter railroading like their illustrious grandfather, James J. Hill. The latest addition is Courtlandt T. Hill, youngest son of Louis W. Hill, chairman of the board of the Great Northern. Young Hill worked in the St. Paul shops of the Great Northern during the vacation season. L. W. Hill, Jr., his brother, who started as a section hand, is now working on the Klamath Falls construction project in Oregon.

J. M. Kurn, president of the St. Louis-San Francisco, probably started his railway career at an earlier age than any other railway president. When he was 14 years old he got a job as night operator at West Branch, Mich., by telegraph. He was a good telegrapher too, since he had been born in the railway station building at Mt. Clemens, Mich., where his father was agent. Several months later one of the officers chanced to discover the size and age of the night operator at West Branch and that ended the boy's railway career for the time being.

Among the material made available to the press by the Interstate Commerce Commission on September 14 was an additional instalment of the "brief" filed by the Illinois Central in support of its protest against the commission's tentative valuation reports covering its property and that of its subsidiaries. Volume I of the brief, containing several hundred pages of the more general part of the case, was made public a couple of weeks ago. Volume II, dealing with cost of reproduction, consists of two parts, aggregating 1,050 pages, plus some appendices. The record of the hearings in this case consists of 10,499 pages and 570 exhibits.

Incidental to the satisfaction which must come to Edward Hungerford, director of the Baltimore & Ohio's centenary celebration, in seeing the culmination of a work which has been going on for several years, is an important item which is not generally known. Some years ago—we won't say just how many—when Mr. Hungerford was in college, he studied architecture. He did not pursue his studies in this field further, however, being deterred by a disliking for mathematics. Now, however, his training has stood him in good stead, for, in co-operation with the engineering department of the railroad, he designed the graceful buildings which house the exhibits at Halethorpe. There was somewhat of a hiatus between the study and the practice, but the talent did not seem to suffer by lying fallow for a time.

For 25 years Joseph Zerrlaut has been the modern Paul Revere of Baltimore, Md. Each night, between the hours of 10:00 p. m. and 6:00 a. m., he has ridden horseback ahead of trains on the Pratt Street Belt Line, sounding his horn to warn

all and sundry of the approach of a train. A city ordinance prohibits the blowing of locomotive whistles on the street and is therefore responsible for Zerrlaut's thousands of miles of horseback riding.

The Baltimore & Ohio centenary celebration brings into the limelight again the feats of Colonel J. M. Schoonmaker, chairman of the board of the Pittsburgh & Lake Erie. As a lieutenant, early in the Civil War, he was given charge of guarding bridges on the Baltimore & Ohio, which were threatened not only by the Confederate forces, but by bands of guerillas who were operating in the neighborhood. All through the severe winter of 1861-62, he kept the line open between Baltimore and Washington. In recognition of his services he was appointed colonel, being the youngest officer of this rank in the Federal army at the time. For services rendered later, Col. Schoonmaker was awarded the Congressional medal of honor.

A Newspaper Reporter Analyzes a Derailment

The following interesting analysis of a locomotive derailment was published in a newspaper of recent date:

CAUSES FOUND FOR LOCOMOTIVE UPSET

"Local officials of the _____ and _____ railroads have about completed their investigation of the derailment which caused the locomotive of the night express for Montreal to topple over as it was rounding the curve above the Columbus-avenue underpass at 9:10 p.m. Wednesday. While it does not appear that formal reports have yet been made in all cases, the inquiries have disclosed (sic) a number of conditions which, in combination, probably produced an excess of rigidity as the train started around the curve and impelled the engine to leave the rails at the frog.

"The track on which the derailment occurred was new, having been completed only a day or two before. It was inevitable that the ballast should lack full pliability and that there would be less than normal free motion on the surface of the rail as the rust had not had time to wear off. The track is said to have been found technically correct in construction, being built for low-speed operation—20 miles an hour or less. Besides this, the natural wear of the buffer casting between the locomotive and the tender had produced a somewhat obscure condition which might, under certain circumstances, have created a thrust tending to carry the engine forward at the time the wheels were being guided around a curve.

"These forces, together with the impetus which the locomotive had received from the steam as the engineer prepared to make his absolutely essential brake test, appear to have been too much for the locomotive's equilibrium, although it is not known what factors the officials will stress in their final reports."



Joseph Zerrlaut Has Been Protecting Crossings in Baltimore for 25 Years

NEWS of the WEEK



LOUISVILLE & NASHVILLE TRAIN DISPATCHERS have been awarded an increase of pay of 58 cents a day by a board of arbitration, effective September 1. A total of 130 men are involved.

HUGH WHITE, who has been attorney for the Alabama Public Service commission since 1923, has been appointed president of that body, succeeding A. G. Patterson, who resigned to accept an appointment as a probate judge.

THE ASSOCIATION of Surgeons of the Norfolk & Western held its annual convention at the Cavalier hotel, Virginia Beach, Va., on September 28 and 29. There was an attendance of about 220 members, representing the medical fraternity along the Norfolk & Western lines in Virginia, West Virginia, Ohio, North Carolina and Maryland; and, with members of their families accompanying, they made up a gathering of about 700 persons.

THE CONSTANT PROGRESS in the introduction of automatic flashing light signals at highway crossings in the state of New York is indicated by the publication every few days of news items telling of the action of the Public Service Commission of the state in approving plans for these improvements presented by various railroads. On September 28, fifteen such approvals were issued; 11 for crossings on the New York, Ontario & Western, two on the New York Central, one on the Pennsylvania and one on the Erie.

Panama Canal Traffic in August

During the month of August, 543 commercial vessels and 17 small launches transited the Panama Canal. Tolls on the commercial vessels aggregated \$2,274,040, and on the launches, \$75, or a total tolls collection of \$2,274,116.

The daily average number of transits of seagoing vessels for the month was 17.52, and the average amount of tolls paid by each of the commercial transits was \$4,187.

With respect to the number of commercial transits, August was the largest month since the opening of the canal, and the tolls collection on these 543 transits was

the second highest in the history of the canal, being exceeded by December, 1923, when \$2,335,729 was collected.

Great Northern Wins Many Points on Tax Appeal

The United States Board of Tax Appeals on September 22 made public a decision on an appeal taken by the Great Northern from rulings by the Commissioner of Internal Revenue as to the computation of its income tax for the years 1917, 1918 and 1919, by which claims of the bureau to the amount of over \$677,000 were reduced by approximately \$550,000.

O'Fallon Hearing on October 5

Hearing of the test case brought by the St. Louis & O'Fallon and the Manufacturers Railway against the Interstate Commerce Commission, in which objection is voiced to the basis used by the Commission in its determination of the valuation of railroad property for rate making purposes has been set for October 5 at Kansas City, Mo., by Federal Judge C. B. Faris of St. Louis, Mo. An injunction is also sought which would restrain the Commission from enforcing its order of March 31, which directed the St. Louis & O'Fallon to pay the government one-half of its excess earnings from 1921 to 1924 under the recapture clause of the Transportation Act of 1920.

Western Firemen's Wage Dispute

Hearings on the demands of the Brotherhood of Locomotive Firemen and Engineers for increases in pay for firemen and hostlers on railroads west of Chicago were begun at Chicago on September 30. The case was first considered at a conference between the firemen's and the managers' committees on July 7. Several days later the United States Board of Mediation was called in and Mediator Edwin P. Morrow participated in the conferences. Both sides then agreed to arbitrate but a failure to agree on the neutral members of the board made it necessary for the federal board to choose them. The neutral members are Paul A. Sinsheimer, vice-

president of the American Trust Company, and H. P. Burke, chief justice of the Colorado Supreme Court at Denver, Colo. The members chosen by the railroads are R. V. Fletcher, general solicitor of the Illinois Central and J. W. Higgins, executive secretary of the Association of Western Railways. The employees chose Albert Phillips and S. A. Boone, vice-presidents of the brotherhood.

Wage Statistics for June

Class I railways reported to the Interstate Commerce Commission a total of 1,821,490 employees as of the middle of June, 1927, an increase of 28,349, or 1.58 per cent, over the returns for the preceding month. The total compensation for the month, \$251,069,719, increased \$1,932,483, or 0.77 per cent. Compared with the returns for the corresponding month last year, the employment in June, 1927, shows a decrease of 0.66 per cent and the total compensation shows an increase of 0.80 per cent. The average straight-time earnings per hour for all employees reported on an hourly basis increased from 57.8 cents in June, 1926, to 58.7 cents in June, 1927, the statement says.

P.R.R.-N.Y.C. Ball Game

The third inter-company baseball game between the Pennsylvania and the New York Central, for the world's railroad baseball championship, will be played in the American League Baseball Park at Cleveland, Ohio, on October 1. The Pennsylvania will be represented by the Philadelphia terminal division team which, after a series of elimination contests, won the Pennsylvania system championship by defeating the Cleveland team, while the New York Central system will be represented by the Detroit team of the Michigan Central which is the champion of the system. The first annual game between these two railroad systems was played on October 6, 1925, at Rochester, N. Y. On that occasion the Philadelphia terminal division team of the Pennsylvania defeated the Indiana Harbor Belt team of the New York Central Lines, by a score of 5 to 4. The second annual game was played at

Indianapolis on October 2, 1926, when the Columbus division team of the Pennsylvania was defeated by the Indiana Harbor Belt team, by a score of 3 to 1.

Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—T. L. Burton, 165 Broadway, New York City. Annual convention, May 5-8, 1928, Detroit, Mich. Exhibit by Air Brake Appliance Association.

AIR BRAKE APPLIANCE ASSOCIATION.—Charles R. Busch, Buffalo Brake Beam Co., 32 Nassau St., New York. Meets with Air Brake Association.

AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—J. D. Gowin, 112 W. Adams St., Chicago.

AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 S. Michigan Ave., Chicago.

AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next annual meeting, November 1, 1927, Havana, Cuba.

AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Annual convention, June, 1928, Memphis, Tenn.

AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—C. E. Bell, Seaboard Air Line, Washington, D. C. Next meeting, October 20-21, 1927, Palmer House, Chicago.

AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 292 Madison Ave., New York. Annual convention, Oct. 3-7, 1927, Cleveland Public Auditorium, Cleveland, Ohio.

AMERICAN RAILROAD MASTER TINNERS' COPPER-SMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borchardt, 202 North Hamlin Ave., Chicago, Ill.

AMERICAN RAILWAY ASSOCIATION.—H. J. Forster 30 Vesey St., New York, N. Y. Division 1.—Operating—J. C. Caviston, 30 Vesey St., New York. Freight Station Section (including former activities of American Association of Freight Agents)—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago. Medical and Surgical Section—J. C. Caviston, 30 Vesey St., N. Y. Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association)—J. C. Caviston, 30 Vesey St., New York. Safety Section—J. C. Caviston, 30 Vesey St., New York. Annual meeting, May 16 and 17, 1928, Buffalo, N. Y. Telegraph and Telephone Section including former activities of the Association of Railroad Telegraph Superintendents.—W. A. Fairbanks, 30 Vesey St., New York. Next meeting, Oct. 4-6, The Willard, Washington, D. C. Division II.—Transportation (including former activities of the Association of Transportation and Car Accounting offices)—G. W. Covert, 431 South Dearborn St., Chicago.

Division III.—Traffic, J. Gottschalk, 143 Liberty St., New York.

Division IV.—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Annual meeting, March 6-8, 1928, Chicago. Exhibit by National Railway Appliances Association.

Construction and Maintenance Section.—E. H. Fritch.

Electrical Section.—E. H. Fritch.

Signal Section (including former activities of the Railway Signal Association).—H. S. Balliet, 30 Vesey St., New York.

Division V.—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Annual convention, June 13-20, 1928, Atlantic City, N. J. Exhibit by Railway Supply Manufacturers' Association.

Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago.

Division VI.—Purchases and Stores (including former activities of the Railway Storekeepers' Association).—W. J. Farrell, 30 Vesey St., New York, N. Y.

Division VII.—Freight Claims, (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill. Annual meeting, 1928, Detroit, Mich.

Car Service Division.—C. A. Buch, 17th and H. Sts., N. W., Washington, D. C.

AMERICAN RAILROAD BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Wacker Ave., Chicago. Exhibit by Bridge and Building Supply Men's Association. Annual convention, October 18-20, 1927, Hotel Nicollet, Minneapolis, Minn.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—M. C. Burton, General Industrial Agent, A. T. & S. F., Topeka, Kan. Semi-annual meeting, Dec. 1 and 2, 1927, Chicago. Annual convention, 1928, Miami, Fla.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railroad Association Division IV).—E. H. Fritch, 431 South Dearborn St., Chicago. Annual meeting, March 6-8, 1928, Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. & St. P. Ry., 11402 Calumet Ave., Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association. Secretary: E. H. Lunde, Federal Machinery Sales Co., Chicago.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, 1319-21 F St., N. W., Washington, D. C. Next meeting, December, 1927.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, Marion B. Richardson, Associate Mechanical Editor, *Railway Age*, 30 Church St., New York.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—E. J. Stocking, 111 West Washington St., Chicago. Next annual convention, Jan. 24-26, 1928, Montreal, Que.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Next meeting, June, 1928, Omaha, Neb.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreuccetti, C. & N. W., Room 413, C. & N. W. Station, Chicago. Annual meeting, Oct. 25-28, 1927, Hotel Sherman, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, 17th and H. Sts., N. W., Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—C. O. Jenista, Barco Mfg. Co., 1801 Winnemac Ave., Chicago. Meets with International Railway General Foremen's Association.

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—D. A. Hultgren, secretary, Massey Concrete Products Co., 1328 McCormick Bldg., Chicago. Annual exhibit at convention of American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 129 Charron St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 626 North Fine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF LOS ANGELES.—J. W. Krause, 514 East Eighth St., Los Angeles, Calif. Regular meetings, second Friday of each month, 514 East Eighth St., Los Angeles.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO..—R. E. Giger, 731 North 23rd St., East St. Louis, Ill. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2nd Thursday each month, except June, July, August, Hotel Statler, Buffalo, N. Y.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—(See Railway Car Department Officers' Association.)

CINCINNATI RAILWAY CLUB.—D. R. Boyd, 811 Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

CLEVELAND RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, except July, August, September, Hotel Hollenden, Cleveland.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Annual convention, 1928, Chicago. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—W. R. Walsh, Ewald Iron Co., Louisville, Ky.

INTERNATIONAL RAILROAD FUEL ASSOCIATION.—L. G. Plant, 80 E. Jackson Blvd., Chicago. Annual convention, May 7-11, 1928, Chicago. Exhibit by International Railway Supply Men's Association.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabash Ave., Winona, Minn.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—W. J. Dickinson, 189 W. Madison St., Chicago. Meets with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York. Annual meeting, May, 1928, Cleveland, O.

NATIONAL ASSOCIATION OF RAILROAD TIE PRODUCERS.—E. A. Morse, vice-president, Potosi Tie & Lumber Co., St. Louis, Mo. Next annual convention, April 24-26, 1928, Arlington Hotel, Hot Springs, Ark.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York. Annual meeting, October 18-21, 1927, Hotel Baker, Dallas, Tex.

NATIONAL RAILWAY APPLIANCES ASSOCIATION.—C. W. Kelly, 1014 South Michigan Ave., Chicago.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: J. E. Long, Superintendent Safety, D. & H., Albany, N. Y.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings 2nd Tuesday in month, excepting June, July, August and September, Copley Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings 3rd Friday in month, except June, July and August.

PACIFIC RAILROAD CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2nd Thursday in month, alternately in San Francisco and Oakland.

RAILROAD MOTOR TRANSPORT CONFERENCE.—R. H. Newcomb, 492 South Station, Boston, Mass.

RAILWAY ACCOUNTING OFFICERS ASSOCIATION.—E. R. Woodson, 116 Woodward Building, Washington, D. C. Next convention, May 1-4, 1928, Atlanta, Ga.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 1406 Packard Bldg., Philadelphia, Pa. Annual meeting, November, 1927, Hotel Commodore, N. Y.

RAILWAY CAR DEPARTMENT OFFICERS' ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago. Supply Men's Association—B. S. Johnson, W. H. Miner, Inc., 209 S. La Salle St., Chicago.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in each month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Meets with Association of Railway Electrical Engineers, Oct. 25-28, Hotel Sherman, Chicago.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—F. W. Venton, Crane Co., 836 S. Michigan Ave., Chicago. Meets with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md. Annual meeting, October 11-13, 1927, Hotel Statler, Detroit, Mich.

RAILWAY REAL ESTATE ASSOCIATION.—C. C. Marlor, 208 W. Washington St., Chicago.

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division and Purchases and Stores Division, A. R. A.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, 1217 Commercial Trust Bldg., Philadelphia, Pa.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—T. F. Donahoe, Gen. Supr. Road, Baltimore & Ohio, Pittsburgh, Pa. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, West Nyack (Rockland Co.), N. Y. Meets with A. R. A., Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—Clyde Kimball, Inman Shops, Atlanta, Ga. Meets semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November, Ansley Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—R. G. Parks, A. B. & A. Ry., Atlanta, Ga.

TRACK SUPPLY ASSOCIATION.—A. H. Todd, Positive Rail Anchor Co., 80 E. Jackson Bl'd., Chicago. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, Gen. Supt. R. S. New York Central, Buffalo, N. Y. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—J. W. Fogg (treasurer), vice-pres. of MacLean-Fogg Lock-Nut Co., 2649 N. Kildare Ave., Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

Traffic

The Wyoming & Missouri River—Aladdin, Wyo., to Belle Fourche, S. D., 18 miles—ceased operation on September 20. Authority for closing business had been given by the Interstate Commerce Commission and by the Railroad Commissioners of South Dakota.

Warren H. Wagner has resigned as assistant chief examiner of the Interstate Commerce Commission, to engage in practice before the commission. Mr. Wagner has been in charge for the commission of the rate structure investigation, No. 17,000, undertaken by the commission pursuant to the Hoch-Smith resolution.

The Palmetto Limited of the Pennsylvania, the R. F. & P., and the Atlantic Coast Line, now runs through from New York to Jacksonville in 26 hours, 50 minutes, the time having been shortened 3½ hours by the new timetable of September 25. The train leaves New York at 7:10 p. m., reaches Jacksonville at 10 p. m. the next evening, and arrives in Miami the following morning at nine o'clock.

The California Growers' and Shippers' Protective League, complainant in the case in which the Interstate Commerce Commission recently ordered a reduction in the rates on deciduous fruits other than apples from California to eastern points, has filed with the commission an answer opposing the petition filed by the railways for a postponement of the effective date of the order for at least sixty days from October 10. The answer is dated at San Francisco on September 19 but the commission acted on September 21, postponing the date for a month to November 10. A postponement, the shippers say, would deprive them of all relief for the season of 1927, as a substantial movement of fruit and particularly of grapes will take place during the period immediately following October 10. They also object to time being allowed the carriers in which to file a bill in equity to enjoin the enforcement of the order in an effort to obtain a court ruling on the commission's interpretation of the Hoch-Smith resolution.

N.I.T.L. Officers Confer with President on Consolidation Legislation

Views of the National Industrial Traffic League concerning amendments to the consolidation-of-railroads provisions of the transportation act were explained to President Coolidge on September 22 by C. E. Childe, president of the league, J. H. Beek, executive secretary, and R. C. Fulbright, chairman of its legislative committee. Repeal of the provision of the law requiring the commission to prepare and make public a comprehensive plan, they said, would give the commission wider latitude in approving plans proposed by the carriers, and in

general they favored the provisions of the Parker-Fess bill.

New Haven Parallels Its Main Line with a Bus Route

The New England Transportation Company, highway subsidiary of the New York, New Haven & Hartford, begins the operation of observation parlor buses between New York and Boston on October 1. The route followed—via Stamford, Conn., New Haven, and New London and Providence, R. I.—parallels the railroad's main line between the two terminals. The highway coaches used in the service are the "Newell" type, with the rear portion elevated to give maximum observation facilities to all passengers.

Two schedules, one day and one night, are operated. The fare is \$6.50 for the day trip and \$5 at night, whereas a railroad ticket costs \$8.26. Mileage is 240, as compared with 229 by rail.

Trans-Missouri-Kansas Advisory Board

Fifteen of the outstanding lines of industry within the territory of the Trans-Missouri-Kansas Shippers' Advisory Board reported at the nineteenth regular meeting of the board at Tulsa, Okla., on September 20, that business prospects for the fourth quarter of this year will be equal to or in excess of that of last year. The industries reporting anticipated increases for the remainder of the year are agricultural implements, clay products, dairy products, eggs, grain, iron and steel articles, lime, plaster and gypsum, petroleum and its products, salt, sand, stone and gravel. Increases in these lines ranged from 2 to 11 per cent.

Based on surveys made by each commodity section, the transportation requirements for the fourth quarter with the exception of coal, indicate total loadings to be 448,782 cars compared with 449,601 cars loaded last year. The fruit industry reports the largest decrease, due to abnormal conditions throughout the season and anticipates a decrease of 56 per cent under last year's loading. The hay industry reports a decrease of 12 per cent in loading because of the poor quality due to excessive rainfall. The potato industry anticipates a decrease of approximately 25 per cent due to reduced yields in the territory brought about by excessive rainfall and high water during the early growing season.

Over 950 Sleeping Cars Used by Fight Fans

Over 950 sleeping cars were furnished by the Pullman Company to the railroads for use in carrying passengers to the Dempsey-Tunney fight at Chicago on September 22. Of these, 450 cars were dispatched from Chicago immediately after the show. The major portion of the travel came from New York, Philadelphia and Pittsburgh. Other points at which heavy travel originated include Los Angeles, Cal., San Francisco, Kansas City, Mo., New Orleans, La., the Twin Cities and points in Ohio.

The Pennsylvania operated 25 special

trains including a special section of the Broadway Limited from New York and another from Philadelphia; and three sections of "The Gladiator," a special from New York and Philadelphia, advertised in advance. Special cars were chartered from New York, Philadelphia, Reading, Pa., Indianapolis, Ind., Cincinnati, Ohio, Cleveland and Columbus, and Louisville, Ky.

The New York Central ran the Twentieth Century Limited in seven sections, and two specials were run from New York, three from Cleveland, two from Toledo and one from Columbus. The Chicago, Milwaukee & St. Paul operated two special trains from the Twin Cities carrying 2,000 passengers.

The Chicago & North Western, the Union Pacific and the Southern Pacific ran a special from Los Angeles.

The Atchison, Topeka & Santa Fe carried between 1,500 and 2,000 fight fans to Chicago in three days, including 125 on a special from Los Angeles and 118 on a special from Tulsa, Okla. The Illinois Central ran a special from New Orleans.

Southwest Advisory Board

Reports of the commodity committees at the quarterly meeting of the Southwest Shippers' Advisory Board, held at Beaumont, Texas, on September 22, indicated a decrease of about 5 per cent in the total estimated carload shipments for the fourth quarter of the year as compared with the same period in 1926. The commodities of which shipments are expected to be less than last year are grain, 50 per cent; mill products, 10 per cent; cotton, 25 per cent; cottonseed and products, 25 per cent; fresh fruit, 10 per cent; ore and concentrates, 10 per cent; petroleum and products, 5 per cent; and vegetable oils, 20 per cent.

A 10 per cent increase in shipments is anticipated in hay and straw; 5 per cent in potatoes; 20 per cent in livestock; 12 per cent in gravel, sand and stone; 15 per cent in lumber and forest products; 10 per cent in sugar, molasses and syrup; 5 per cent in iron and steel; 8 per cent in cement; 10 per cent in lime and plaster; 30 per cent in agricultural implements and vehicles, and 20 per cent in paper and printed matter. The shipments of coal and coke, citrus fruits, fresh vegetables, automobiles and trucks, fertilizers and chemicals are expected to approximate shipments of these commodities last year.

The importance of heavier car loading was given considerable discussion with a view to avoiding transportation waste when car capacity is not utilized to the extent that this is practicable. During the discussion it was developed that Anderson, Clayton & Co., operating cotton presses in the southwest, awarded prizes this year to the presses making the best records in car loading efficiency. Nine prizes were offered, ranging from \$500 to \$50 and totaling \$1,425. The purpose of this form of contest was to secure a more rapid movement of cotton during a heavy crop movement. The unloading capacity of any warehouse is regulated by the number of cars at its platforms, and the capacity will be small if these cars are not fully loaded.

The Southwest Board voted unanimously for a joint meeting with the Southeast Board at New Orleans in February.

Views of Individual Commissioners on Canadian Rate Decision

Disclosing a higher degree of agreement or disagreement than had been anticipated, the judgments of the various members of the Dominion Railway Board in the general equalization of rates case were issued last week in a volume numbering about 300 pages. The order based on these judgments was made public late in August (*Railway Age*, September 3, page 448). During the hearings of that case, which occupied more than a year, nearly 15,000 pages of evidence were taken, and the inquiry was probably the most extensive ever conducted by the Board.

There is considerable unanimity among the Commissioners in favor of the first part of that order which provided for reduction of grain rates on all lines in the Prairie provinces down to the level of the Canadian Pacific main line rates (Crow's nest basis). Only the two members who wrote the original order, Chief Commissioner H. A. McKeown and Commissioner Frank Oliver, stand for the second part of the order, the effect of which is to refuse to rescind their order of two years ago removing the Rocky Mountain differential against westbound grain and flour.

The Board is practically unanimous for the third part of the order, providing for extension of the distribution rates on certain commodities in the prairie provinces to the Canadian National, as well as the Canadian Pacific. In the case of the two last parts of the order, providing for reduction of the rate on all grain eastbound from Armstrong, Ont., to Quebec City for export (on the National Transcontinental) and reduction of grain rates from Georgian Bay ports for export and of rates on all traffic from Toronto and points west, so that the rate to Quebec would be the same as to Montreal, three of the Board favor the order—Chief Commissioner McKeown, Deputy Chief Commissioner Vien, and Commissioners A. C. Boyce and Calvin Lawrence. Commissioner Frank Oliver dissents, his view being that the rate reduction from Armstrong to Quebec is not sufficient to meet the desired end and that by not extending the reduction, proportionately to St. John and Halifax, the Board is acting rather "in defiance to the instructions of the government than in compliance with them." Assistant Chief Commissioner S. J. McLean opposes such a move which would impose out-of-pocket costs upon the railways.

Two members of the Board, in the course of their judgments, expressed views concerning the present position of the two principal railways in Canada, as related to rate-fixing or rate-control by the Board, which would seem to indicate some concern on the part of the Board for the financial welfare of the railways. "We are all agreed," says Chief Commissioner McKeown, "that rates cannot be reduced to a level which would cripple the operation of the roads, or would make it impossible for them to effect such yearly increases in mileage and equipment which the growing necessities of the country demand."

Foreign Railways

South African Railways to Build Pre-Cooling Plant

The South African Railways will build a pre-cooling plant at Durban at an estimated cost of £176,000, according to the *Times* (London) Trade Supplement. The purpose of the plant will be to cool citrus fruits before loading at Durban, since it has been found that much of this fruit shipped from Durban to England has not become properly cooled before reaching the English market, the result being a great wastage.

Attempt to Wreck Legion Trains

In the South of France on September 25 train wreckers made three efforts to wreck trains on which delegates to the American Legion convention were riding. The first consisted of the demolition of a short stretch of track by the explosion of a bomb. In another place an obstruction in the form of two large blocks of stone was placed on the rails, and in the third case an unexploded bomb was found. None of the efforts, however, resulted in derailments, all being discovered in time to notify and stop approaching trains.

Railroad Treaty for Equatorial Africa

Portugal and Belgium have signed a treaty with reference to their possessions in Central Africa, i. e., Angola and the Belgium Congo respectively. One of the terms of the treaty provides that Belgium will begin the construction of a railway to connect with the Portuguese Lobito Bay-Katanga Line. Another section of the treaty provides for the ceding of a small area of Portuguese territory at the mouth of the Congo to Belgium, to enable the latter country to improve and relocate the railroad line terminating at that point without being forced to build it through foreign territory.

Oldest British Railway to Be Electrified

The Mumbles Railway at Swansea, Wales, the oldest railway in the United Kingdom, is to be electrified, says the *Times* (London). The railway was incorporated in 1804 and opened in 1807. For 70 years horse-drawn trains plied its 5½ miles track, and for the last 50 years quaint steam trains, still running on the open road for a considerable part of the route, have carried on the service. Electrification of the line has long been discussed, and is now to be undertaken by the Swansea Improvement & Tramway Company in conjunction with the Swansea Corporation. It is expected that the change will be completed by next March.

A 7½ to 15-minute service is to be maintained as required, with a schedule speed of 12 miles an hour. Five two-car trains will be used, each car having accommoda-

tion for 110 passengers. The trains will be operated from an overhead trolley line at 650 volts.

Argentine Railways Prosper

The Buenos Aires Great Southern and the Buenos Aires Western, two Argentine railways owned in London, have declared final dividends for the fiscal year ended June 30. The dividends declared bring the total for the year for the former company up to 8 per cent on the common stock and 7 per cent for that of the latter. The last fiscal year, it is believed, final figures will show to have been the best yet experienced by the Argentine railways. The prosperity has been further augmented for the British owners by the return of Argentina to the gold standard, obviating loss through exchange in transmitting dividends to London.

New Railway for Australia

The Australian federal government has awarded a contract to a local concern for the construction of a 271-mile line extending northward from Oodnadatta (South Australia) to Alice Springs, according to the *Times* (London). The contract price is £695,320 and represents labor only; the government will supply all materials.

The new line will be a link in the proposed north-south trans-continental line, with Port Darwin on the North as its ultimate objective. A line extending a short distance southward from Port Darwin is already in operation. Oodnadatta has railway connections with the South Australian railway system, which in turn is connected with the railways of Queensland, New South Wales, and West Australia.

Through Service Between Europe and Russian Far East

Through passenger and freight traffic was opened recently from Europe via Latvia, Estonia, and Siberia, to the Russian Far East, according to the *Moscow Economic Life*.

The Chosen and South Manchurian railways, the Japanese Steamship Company (Osaka-Chosen Kaisha) and the Chinese Eastern Railroad have also started the sale of through tickets, and baggage is accepted for direct shipment via Siberia to stations in the Soviet Union and to Riga on the Latvian Railroad, and to the Tallinn on the Estonian Railroad.

In Moscow tickets are on sale, and baggage is accepted, for Harbin, Manchuria, and Tokyo, Japan. Through trains are running from Moscow to Manchuria twice a week; to Vladivostok, once a week.

Other ways of travel between Asia and Europe are via the Suez Canal or by land and water via America. The routes between Peking and Paris, and between Tokyo and Paris, via the Suez canal, require 37 to 42 days respectively, and

cost \$525 and \$550 respectively. The railroad trip via Siberia costs much less, \$220 to \$250, and takes only from 12½ to 14½ days.

An Analysis of a High Speed Run on the Great Western

The new locomotive of the Great Western Railway of England, the "King George V," which is on display at the Baltimore & Ohio centenary celebration, is regularly used in heavy and fast express service between London and Plymouth. Many high speed schedules are in operation between these points, among which probably the best known and most difficult is that of the "Cornish Riviera Express," which for 21 years past has been scheduled to make the trip of 225½ miles without a stop in four hours seven minutes. During this period the weight of the train has been steadily growing, but the new "King" class of locomotives has shown its ability to handle it with such ease that on August 26 the schedule was accelerated to make the run in four hours flat and to pass Exeter, 173.7 miles from London, in 175 minutes, practically equal to 60 miles an hour.

Locomotive operation in England has some advantages and some handicaps compared with that of America. Cars are lighter, train loads are less, and grades, though often severe, are mostly relatively short. The hardest pulls between London and Plymouth are 2.5 per cent grades, but these are for only two or three miles at a stretch, and there is nothing in the South of England like the long pulls over mountain ranges in America. Then again, there are a negligible number of highway grade crossings and for this and other reasons scheduled slow-downs are few (there are only seven of any importance between London and Plymouth), so that high speed can be held unbroken for long distances together. These same public highways, however, which cross the tracks, in their hundreds on small span bridges built in days when the "North Star" was the latest and largest thing in locomotives, severely restrict the clearances now, when more room is needed for boiler and firebox; and as

far as size goes, the "King George V" is no monster beside the latest productions of America.

Still the Great Western points out that it has a tractive effort equal to that of a typical American "Pacific" such as the "P-6" class of the Baltimore & Ohio, or the "G. 1." of the Reading in a machine of less than three quarters of their weight. To show what kind of work these engines are actually doing, a "log" of a typical trip of the Cornish Riviera Express is given in the table shown at the foot of this page.

Western Australian Railways in 1926-27

The Western Australian Government Railways in the fiscal year ended June 30, 1927, earned a surplus over operating expenses and interest of about \$155,500, as contrasted with a deficit in the year ended June 30, 1926, of about \$143,900, according to the commissioner's annual report. The year ended June 30, 1927, was one of the best in the last five years, gross amounting to about \$16,235,800, as against the highest previous year since 1922, which was 1925, when gross totaled a little over \$15,000,000. The net return on capital earned in the year ended June 30, 1927, was 4.28 per cent, as against 3.94 per cent in the previous year and 4.94 per cent in 1925.

The statement of operations shows various averages per mile of line operated. Earnings per mile operated amounted to about \$4,146, while operating expenses per mile amounted to about \$3,090; interest charges per mile amounted to about \$1,000. The average number of miles operated in 1927 was 3,906, the highest average number in any one of the last five years, the highest previous being 3,837 in 1926. The surplus earned per mile was about \$39. It is interesting to note that in the year ended June 30, 1927, the number of passengers carried amounted to somewhat less than any of the previous five years, 15,737,570 "passenger journeys" being made, as against about 16½ million in 1926, 17 million in 1925 and 18 million in 1924.

There were 3,338,113 tons (of 2,240 lb.) of freight carried and 100,474 tons of live-

stock in the year ended June 30, 1927, and the total long-ton miles, adding paying freight to livestock, amounted to 317,844,526, as compared with the highest previous year's figure, 277,189,629. The average haul was 92.43 miles, as against the highest previous average mileage in 1925, which was 84.2.

This traffic, in the year ended June 30, 1927, was handled with 396 locomotives, 479 passenger cars and 10,329 freight cars, and the equivalent of freight cars in four-wheel "wagons" totaled 12,471. In the year ended June 30, 1926, the number of locomotives in service was 395, passenger cars 481, freight cars 10,209 and the equivalent of freight cars in four-wheel "wagons" 12,365. The average number of persons employed during the year was 8,827, as compared with the highest previous year 1925, when 8,251 were employed. In a statement of ton mileage for the year, it is shown that the most important traffic-producing commodity moved was wheat, which amounted to 92,526,179 long-ton miles for 663,745 long tons moved. The next highest commodity was local timber, of which 603,640 tons were carried, and a total of 48,848,687 ton miles.

Proposed Line of Trans-Persian Railway Being Surveyed

Six surveying parties under the direction of American engineers have been working along the proposed line of the Trans-Persian railway which will connect Bandar-i-Gaz on the Caspian Sea with a Persian Gulf port, probably Khour-i-Moussa, according to Consul O. N. Nielsen, Teheran. The preliminary survey along the Karum river between Mohammerah and Ahwaz had been completed by the end of June. A preliminary survey of the stretch between the latter point and Khour-i-Moussa had also been made and a harbor survey of the proposed southern terminal was under way. Reconnaissances north and northwest of Dizful indicated that there was no insuperable obstacle to a line in this difficult region up to a point about 20 miles from the city. In the north, one party at the end of the month was working east of Teheran. Another party was engaged in a survey of Bandar-i-Gaz harbor. A credit of \$5,000,000 out of the sugar and tea monopoly trust fund was voted by the Parliament for the preliminary work of the Railway Administration. Estimates of the requirements of construction material are in preparation and it is hoped soon to place specifications in the hands of Persian Embassies and Legations. The diplomatic missions will advertise for bids.

		10:30 a. m. Paddington to Plymouth, 9/9/27.		(Tons are 2,240 lb.)	
Miles	Stations, etc.	Actual min., secs.	Sched. mins.	Remarks	
0.0	Paddington dep.	0.0	..	.....
0.3	Westbourne Park, p.	3.07	..	.....
0.1	Southall	12.42	11	.....
8.5	Slough	21.27	20	Maximum 69.1.	
2.5	Taplow	24.56	..	.....
4.2	Maidenhead	26.30	25½	.....
6.0	Reading	37.07	37	40 m.p.h. post 15-35, average of 67.6.	
3.1	Newbury	56.36	56	F.W.R. Midgham, slight.	
6.4	Bedwyn	70.17	69½	P.W.R. Hungerford, slight.	
0.1	Savernake	74.34	..	Minimum 45.0.	
5.6	Westbury	96.59	98½	35 m.p.h. maximum 78.2. Averaged 75 from posts 74-89.	
101.3	Frome	104.06	..	38 m.p.h.	
108.5	Brewham Summit	112.35	..	Minimum 50.5.	
115.3	Castle Cary	118.19	120	Maximum 76.2.	
137.3	Cogload Junction	140.21	143	Easy from Castle Cary.	
142.9	Taunton	145.16	148	.....
153.8	Whiteball	158.02	179	Minimum 33.	
173.7	Exeter	175.39	203	Maximum 78.9 (Tiverton Jet.).	
193.9	Newton Abbot	199.05	203	.....
197.8	Dainton	208.32	209½	Sigs. Aller Siding, almost stopped.	
202.5	Totnes	214.33	215½	Minimum 18.9.	
207.5	Battery	223.16	223	Sigs. Ashburton Jet., 50 m.p.h.	
209.4	Brent	226.36	225	Minimum (sustained), 24.8.	
219.0	Hemerdon	236.47	237	.....
225.7	Plymouth North Rd. a.	244.54	247	.....



Station at Baldwin, Fla.

Equipment and Supplies

Equipment Market in Month of September

The outstanding feature of the market in September was the authorization by the Pennsylvania for 300,000 tons of rails, and the order by the Louisville & Nashville for 61,600 tons.

The equipment market in the month of September was not an unusually good market, although enough freight and passenger cars were ordered to keep the total for the nine months on a par with the total in the same period last year, and in the case of passenger cars, somewhat ahead of last year. Orders for locomotives were few, however. There were some inquiries made in the month, and indications point to a pick-up in the market for all classes of equipment within the next few weeks.

Locomotives ordered in September, as reported in the issues of the *Railway Age*, for the four weeks ended September 24, amounted to only 6 as compared with 31 in the same month last year. The total for the nine months is 482.

Freight cars ordered were 40 as against 2,564 last September. However, the small figure is enough to run the nine months total well over 44,000 to approximate the number ordered in nine months last year.

Passenger cars also were small in number ordered, 19 being ordered in September. This was sufficient, however, to boost the total for the nine months to a figure about 100 over the figure for the same period last year.

Locomotives

THE WINSTON-SALEM SOUTHBOUND is inquiring for one locomotive tender.

THE DETROIT & TOLEDO SHORE LINE has ordered 4 eight-wheel switching locomotives from the American Locomotive Company. This company was reported, in the *Railway Age* of September 3, as contemplating the purchase of this equipment.

Freight Cars

THE WINSTON-SALEM SOUTHBOUND is inquiring for 8 all steel or composite caboose cars.

THE NORFOLK & WESTERN will construct 250 all steel automobile box cars, in its Roanoke shop.

THE LEHIGH COAL & NAVIGATION COMPANY has ordered one 30-yard extension side dump car, from the Clark Car Company.

THE LOUISIANA & ARKANSAS has ordered 8 steel underframe flat cars of 40 tons' capacity from the American Car & Foundry Company.

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THE OTIS STEEL COMPANY has ordered three 30-yard extension side dump cars from the Clark Car Company.

THE AMERICAN STEEL & WIRE COMPANY has ordered 20, 30-yard extension side dump cars, from the Clark Car Company.

THE SOLVAY PROCESS COMPANY has ordered 30 class V tank cars from the American Car & Foundry Company. It has also ordered 5, 30-ton multi-tank cars from the same builder.

THE NORTHERN PACIFIC contemplates repairing from 500 to 1,000 box cars. This company has ordered 200 flat car underframes from the Siems-Stemble Company. Inquiry for the underframes was reported in the *Railway Age* of August 27.

THE GREAT NORTHERN is continuing the car building program which it has followed for the past several years. The program includes the underframing of 2,500 freight cars, and the construction of 500 to 1,000 box cars and 150 flat cars per year. The work is divided among the various company shops.

Passenger Cars

THE CHICAGO BURLINGTON & QUINCY is inquiring for 26 gas electric rail motor cars.

THE GEORGIA & FLORIDA is inquiring for four 70-ft. coaches or four 60-ft. coaches; 2 combination passenger and baggage cars and 5 combination passenger, baggage and mail cars.

Iron and Steel

THE TEXAS & PACIFIC is inquiring for 100,000 tie plates.

THE PENNSYLVANIA is inquiring for 100 tons of steel for a bridge at Lansdowne, Pa.

THE NEW YORK, NEW HAVEN & HARTFORD is inquiring for 150 tons of steel for a bridge at Pittsfield, Mass.

THE BALTIMORE & OHIO has ordered 700 tons of steel for use at Middletown, Ohio, from the McClintic-Marshall Company.

THE MICHIGAN CENTRAL has ordered 200 tons of structural steel for a bridge over Bad river in Michigan, from the American Bridge Company.

THE CHESAPEAKE & OHIO is inquiring for 300 tons of structural steel for approaches to a bridge over the Ohio river at Cincinnati, Ohio.

Machinery and Tools

THE CHICAGO, MILWAUKEE & ST. PAUL is asking for prices on one 44-in. motor-driven boring mill.

Signaling

THE BOSTON & MAINE has ordered from the General Railway Signal Company an electric interlocking for Dover, N. H., 46 working levers; also a similar plant for Lowell Junction, Mass., 33 working levers.

Supply Trade

John J. Hilt has been appointed sales manager of the Young Radiator Company, Racine, Wis.

The H. K. Ferguson Company, Cleveland, Ohio, has moved its offices from 4900 Euclid avenue to the Hanna building.

N. R. Crawford, for several years director of sales for the Industrial Works, Bay City, Mich., has resigned, effective October 1.

George L. Drake has been appointed agency sales supervisor for the Lo-Hed hoist division of the American Engineering Company, Philadelphia, Pa.

Horace Parker, president of the Bradford Corporation, has also been elected president and a director of Edwin S. Woods & Company, Chicago.

The Foote Bros. Gear & Machine Company, Chicago, has purchased the plant, capital stock and business of the A. Plamondon Manufacturing Company, Chicago.

J. C. Rowett has been appointed factory district representative of the Foote Bros. Gear & Machine Company, Chicago, for Minnesota and northwest Wisconsin, with headquarters at Minneapolis, Minn.

William S. Miller, manager of the railroad department of the Parsons Company, Newton, Iowa, has resigned to become manager of the railroad sales for the Northwest Engineering Company, Chicago.

A. K. Lewis, assistant to the vice-president and general manager of the American Rolling Mill Company, Middletown, Ohio, has been appointed vice-president in charge of operations of the Columbia Steel Company, Butler, Pa., which has been acquired by the former company.

T. F. Barton of the central station engineering department of the General Electric Company at Schenectady, N. Y., has been appointed engineer of the New York district, with headquarters at 120 Broadway, New York City, and J. B. Bassett of the New York office is now executive engineer of the New York district.

The Alexander Milburn Company, Baltimore, Md., maker of welding and cutting apparatus, etc., has opened an office under the name of the Alexander Milburn Sales Company, 50 Terminal street, Boston, Mass. This office, under the supervision of M. B. Crouse and G. B. Malone, will handle the sale and distribution of Milburn equipment in the New England states.

The stockholders of both the Brown Hoisting Machinery Company, Cleveland, Ohio, and the Industrial Works,

Bay City, Mich., have approved the consolidation of these companies effective about October 1. The consolidated company will be known as the **Industrial Brownhoist Corporation**, with general offices in Cleveland. The proposed consolidation and approval of the directors was reported in the *Railway Age* of August 27.

Lewis K. Sillcox, who resigned as general superintendent of motive power of the Chicago, Milwaukee & St. Paul on September 15, has been appointed assistant to the president of the **New York Air Brake Company**, with headquarters at New York, effective October 1. Mr. Sillcox was born on April 30, 1886, at Germantown, Pa., and received his schooling at Trinity School, New York, and at the Polytechnic School of the University of Brussels in Belgium. He entered railway service in July, 1903, as a roundhouse apprentice on the New York Central & Hudson River (now the New York Central) at High Bridge,



L. K. Sillcox

N. Y., leaving railway service three years later to become moulder and assistant superintendent of the McSherry Manufacturing Company, Middletown, Ohio. In 1909 he was appointed shop engineer of the Canadian Car & Foundry Co., Montreal, Que., where he remained until 1912 when he returned to railway service as mechanical engineer of the Canadian Northern (now a part of the Canadian National) at Toronto, Ont. Mr. Sillcox was appointed mechanical engineer of the Illinois Central, with headquarters at Chicago, in 1916 and in 1918 he became master car builder of the Milwaukee, with headquarters at Milwaukee, Wis. On June 1, 1920, he was promoted to assistant general superintendent of motive power, with headquarters at Chicago, and two months later he was again promoted to general superintendent of motive power, a position he held continuously until his resignation and appointment as assistant to the president of the New York Air Brake Company. Mr. Sillcox resigned on September 15, as chairman of the Mechanical Division of the American Railway Association and from all committees of which he was a member. He was elected

chairman of the mechanical division in June, 1926, and his present tenure of office would have expired in June, 1928.

Obituary

Sam Demarest, formerly lighterage agent of the Central of New Jersey and for the past several years assistant traffic manager of the Atlas Portland Cement Company, New York, died suddenly at his home in Newark, N. J., on September 22.

Horace A. Beale, Jr., president of the Parkesburg Iron Company, Parkesburg, Pa., died on September 6, at the age of 57. Mr. Beale was born at Hibernia, Pa., and began work with the Pennsylvania Steel Company, Steelton, Pa., in 1892. In 1893 he entered the employ of the Parkesburg Iron Company where he became vice-president in 1898 and president in 1900. During his administration of the Parkesburg Iron Company, a tube mill for manufacturing charcoal iron into boiler tubes was built in 1908.

Frederick Edward Paradis, district engineer of the New York Central at Buffalo, N. Y., from 1907 to 1917, and more recently owner of the Flexible Armored Hose Company, Buffalo, died on September 21 at the Chicago Hospital, Chicago, after an illness of several months. Mr. Paradis was born in Vermont on December 24, 1869, and after an education in private schools he entered railway service in 1888 as an assistant engineer on the Central Vermont. From 1890 to 1893 he served as a draftsman in the engineering department of the Northern Pacific. Mr. Paradis was then promoted to assistant engineer, a position he held until 1895 when he became chief engineer of the Chicago & Northern Pacific (now a part of the Baltimore & Ohio Chicago Terminal). In 1897 he was appointed chief engineer of the Chicago Terminal Transfer (acquired by the B. & O. C. T.). During 1906 and 1907 Mr. Paradis was in charge of the construction of a yard of the New York Central & Hudson River (now the New York Central) at Buffalo and upon the completion of that work he was promoted to district engineer of the Western district, with headquarters at Buffalo. He left railway service in 1917 to engage in the manufacture of flexible metallic hose, retiring from active business life in 1921.

Trade Publications

SPRAL LOWERING CHUTES.—The Roberts & Schaefer Company, Chicago, has issued Bulletin No. 94, describing and illustrating its spiral lowering chutes, which have been designed to minimize the breakage and segregation of lump coal when being placed in locomotive coaling plants. These chutes, which are built of plates and angles, are stationary, and are said to require little attention.

Construction

ALBANY PORT DISTRICT COMMISSION.—An application to the Interstate Commerce Commission asks authority for the construction of a 3-mile terminal railroad to connect the docks now under construction in the Albany port district with the tracks of the New York Central, Delaware & Hudson and West Shore.

ATCHISON, TOPEKA & SANTA FE.—Authorization has been made by this company for a general program of improvements at Streator, Ill. This project will include the construction of a one-story brick and concrete passenger station, a freight station, a 500-ton steel coaling station, rearrangement of water facilities and necessary track changes.

BALTIMORE & OHIO.—This road is preparing to erect a number of bridges at Middletown, Ohio.

BALTIMORE & OHIO.—A contract for the construction of water treating plants at Hamler, O., and Kellar, has been let to the Pittsburgh Des Moines Steel Company, Pittsburgh, Pa.

CANADIAN NATIONAL.—Plans have been prepared by this company for the construction of a 30-stall brick and steel roundhouse, with machine shop and accompanying yard facilities at Tecumseh, Ont., at an estimated cost of \$1,000,000.

CHICAGO & NORTH WESTERN.—Bids closed on September 28 for the construction of a brick and concrete passenger station at Lombard, Ill.

CHICAGO, ROCK ISLAND & PACIFIC.—A contract has been let to the T. S. Leake Construction Company, Chicago, for the construction of a one-story brick passenger station with outside dimensions of 24 ft. by 83 ft., at Sayre, Okla.

GRAND TRUNK WESTERN.—Bids closed on September 29 for the reconstruction of four bays of the freight station at Muskegon, Mich., and the addition of a second story to provide space for an office. Cost of this work is expected to involve an expenditure of about \$25,000.

ILLINOIS CENTRAL.—This company has filed with the Interstate Commerce Commission a petition for a further extension of time from December 31, 1927, to June 30, 1928, for the completion of the extension in southern Illinois under construction by the Southern Illinois & Kentucky.

ILLINOIS CENTRAL.—The Interstate Commerce Commission has allowed an extension of time to June 30, 1928, for the completion of the construction of the Southern Illinois & Kentucky line from Edgewood to Metropolis, Ill., and from Fulton, Ky., to a point near the Ohio river.

PENNSYLVANIA.—This road has let a contract to the John F. Casey Co. of Pittsburgh, Pa., for the construction of seven temporary train platforms at the east end of its train shed in Pittsburgh.

The cost of this work is estimated at about \$40,000. This company plans the construction of a bridge at Lansdowne, Pa.

PITTSBURGH & WEST VIRGINIA.—F. E. Taplin, president of the P. & W. V., testified at the hearing on this company's application to the Interstate Commerce Commission for authority to build an extension from Cochran's Mill, near Pittsburgh, Pa., to Connellsville, estimated to cost \$15,000,000. He said this would afford a new route by which traffic from the Wheeling & Lake Erie, P. & W. V., and West Side Belt might be routed eastward instead of via other lines, thus avoiding the congested Pittsburgh district. He was cross-examined by W. A. Colston, general counsel of the New York, Chicago & St. Louis, which has filed an intervening petition opposing the application, and also by G. M. Shriner, vice-president of the Baltimore & Ohio, who brought out that there are already two double-track roads having a water grade between Pittsburgh and Connellsville, the Baltimore & Ohio and the Pittsburgh & Lake Erie, whereas the new road would have a one per cent ruling grade. He also pointed out that there are only three tracks over the mountains and asked if it would not be more in the public interest to improve and co-ordinate the facilities over the mountains than to increase congestion at the foot of the mountains by building another track to connect with the Western Maryland at Connellsville. Mr. Taplin said the Western Maryland is capable of handling a greatly increased traffic over the mountains.

ST. LOUIS-SAN FRANCISCO.—A contract has been awarded to Will F. Pauly, for the construction of a one-story brick combined passenger and freight station at Columbus, Miss., and for the construction of a station of similar type at Demopolis, Ala. The cost of construction of the two stations is estimated at \$125,000. The outside dimensions of each building will be 35 ft. by 226 ft. Included in each project is a brick and reinforced concrete platform 226 ft. long.

TEXAS & NEW ORLEANS.—A contract has been awarded to the Johnston Construction Company, Galveston, Tex., for the construction of a concrete and timber highway subway under the tracks of this company at Galveston. The cost of this structure, which is estimated at \$25,000, will be borne jointly by the city and the railroad.

UNION PACIFIC.—A contract for the construction of a reinforced concrete viaduct across the Industrial District Yards, including tracks of this company and the Atchison, Topeka & Santa Fe at First street, Los Angeles, Cal., has been awarded to the North Pacific Construction Company. The contract price of the viaduct is \$613,400, while the cost of acquiring land for approaches and track changes will make the total estimated cost of the viaduct about \$1,500,000. This new structure which will be 2,062 ft. long, will replace a wooden viaduct that was originally constructed in 1889. The cost of construction will be divided between the Union Pacific, the Santa Fe, the Los Angeles Railway, a street railway, and the city of Los Angeles.

RAILWAY AGE

Railway Finance

BOSTON & MAINE.—*Bond Issue Approved.*—The Interstate Commerce Commission has approved the issuance of \$30,942,000 first mortgage 5 per cent bonds, series AC. The purpose of the issue is to refund obligations described as follows:

Among the various bonds issued by the applicant, \$29,298,500, bearing interest at 6 per cent and originally issued to the United States government, will be due January 1, 1929. Of these bonds, \$26,980,000 were purchased from the government by a syndicate of bankers, which now owns them and has agreed to exchange them for an equal amount of the proposed bonds upon payment by the applicant of \$9.75 cash for each \$100, principal amount, of bonds exchanged, or on the basis of 90.25 per cent of par for the bonds to be received from the applicant. The remaining amount, \$2,318,500, has been purchased from the government recently by the applicant, which has also purchased on various dates between September 1 and October 21, 1926, at not more than par, \$1,644,000 of 5 per cent bonds [maturing in 1940 and 1041], that are convertible into prior-preference stock.

CHICAGO & ILLINOIS MIDLAND.—*Equipment Notes.*—The Interstate Commerce Commission has authorized the issuance of promissory notes totaling \$1,058,531 to be delivered to the Pullman Company in payment for 350 freight train cars and 6 passenger train cars having a total approximate cost of \$975,310. The notes are to mature over a period of ten years, and the carrier is to operate the equipment during that period under a lease.

CHICAGO & NORTH WESTERN.—*Equipment Trust Certificates.*—This company has applied to the Interstate Commerce Commission for authority for an issue of \$2,610,000 of equipment trust certificates. The Chicago, St. Paul, Minneapolis & Omaha has also applied for authority for an issue of \$830,000 of similar certificates.

MOBILE & OHIO.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue \$13,879,000 of refunding and improvement mortgage 4½ per cent gold bonds, to be sold to J. P. Morgan & Co., at 92½ and interest, the proceeds to be used to retire outstanding bonds and to reimburse the company's treasury. Sale of these bonds to the public was reported in the *Railway Age* of September 24. The offering price was 95.

NEW YORK CENTRAL.—*Short Lines Oppose Further Hearings.*—The Ulster & Delaware, the Federal Valley and the Fonda, Johnstown & Gloversville, short lines connecting with the New York Central, have filed with the Interstate Commerce Commission petitions opposing the company's application for further hearing on its application for authority to lease the Michigan Central and Cleveland, Cincinnati, Chicago & St. Louis. The company asked an opportunity to introduce further testimony relating to the connecting short lines, but the latter take the position that it had ample opportunity to do so at the original hearing and object to further hearings on the ground of the expense involved.

NORTHERN CALIFORNIA.—*Incorporation.*

—Articles of incorporation have been filed with the secretary of state of California by this company for the purpose of constructing a line between Crescent Mills, Cal., and Westwood, 31 miles. Connection will be made with the Indian Valley at Crescent Mills, which in turn connects with the Western Pacific at Paxton, Cal., and with the Southern Pacific at Westwood. This company, which is a subsidiary of the Red River Lumber Company, will have a capitalization of \$1,000,000. Headquarters will be situated at San Francisco, Cal.

PENNSYLVANIA.—*Valuation.*—This company, in its brief filed with the Interstate Commerce Commission in support of its protest against the commission's tentative valuation of its properties, takes the position that the valuation as reported does not include a sufficient, if any amount, for the element of value for going concern of a good business over and above the value of the component parts of the physical property and refers to testimony by Thomas W. Hulme, vice-president, placing the amount which should be allowed for going concern valued at, at least, \$100,000,000. This figure, he said, is for the Pennsylvania Railroad Company and the companies that were operated by it and included in the tentative valuation as served upon the Pennsylvania, not including other parts of the system covered in separate valuation reports. Twenty-seven separate valuation docket cases relating to the Pennsylvania system were consolidated for the hearing and after conferences with the Bureau of Valuation a number of "Class I stipulations" were executed as to points on which there was agreement. Also 337 Class 2 stipulations were executed covering matters as to which there is agreement on the facts but disagreement as to the principle applicable to the agreed facts and 332 stipulations as to which there is complete disagreement. The company did not set up in its brief any figure representing its claim for total value.

PITTSBURGH & WEST VIRGINIA.—*Acquisition.*—This company has applied to the Interstate Commerce Commission for authority to acquire all the property, franchises, etc., of the West Side Belt, of which it owns the outstanding stock, and to terminate its corporate existence.

PITTSBURGH, BESSEMER & LAKE ERIE.—*Bonds Authorized.*—The Interstate Commerce Commission has authorized this company to issue \$3,557,000 consolidated first mortgage 5 per cent 50-year bonds to be exchanged for bonds of the Pittsburgh, Shenango & Lake Erie.

ST. LOUIS SOUTHWESTERN.—*Control of Subsidiary.*—The Interstate Commerce Commission has approved an extension of

the lease for an additional two years of the Stephenville North & South Texas.

WESTERN NEW YORK & PENNSYLVANIA.—*Stock Authorized.*—At a special meeting of the stockholders of the Western New York & Pennsylvania held on September 21 at Philadelphia, an increase was authorized in the common stock of the company from \$20,000,000 to \$25,000,000 and the creation of \$8,000,000 of new non-cumulative 5 per cent preferred stock. The purpose is to permit settlement of the company's indebtedness to the Pennsylvania Railroad, which owns 99 per cent of the common stock and income mortgage bonds, for construction advances amounting, up to the close of last year, to \$23,846,951; and also to reduce the preponderance of debt as compared with the outstanding stock by readjusting the capitalization.

Dividends Declared

Akron, Canton & Youngstown.—4 per cent, payable October 1 to holders of record September 15.

Carolina, Clinchfield & Ohio.—4 per cent; stamped certificates, \$1.25, both payable October 10 to holders of record September 30.

Georgia Railroad & Banking.—2½ per cent, quarterly, payable October 15 to holders of record October 2.

Kansas City Southern.—Preferred, 1 per cent, quarterly, payable October 15 to holders of record September 30.

Meadville, Conneaut Lake & Linesville.—2 per cent, payable October 1 to holders of record September 15.

Midland Valley.—Common, \$1.25, payable October 15 to holders of record September 30.

New London Northern.—2½ per cent, quarterly, payable October 1 to holders of record September 16.

Northern Railroad of New Hampshire.—1½ per cent, quarterly, payable October 1 to holders of record September 12.

Panama Railroad.—5 per cent, payable September 16.

Providence & Worcester.—2½ per cent, quarterly, payable September 30 to holders of record September 14.

Average Price of Stocks and Bonds

	Sept. 27	Last week	Last year
Average price of 20 representative railway stocks.	119.22	120.76	104.28
Average price of 20 representative railway bonds.	95.23	95.31	90.90

THE INTERSTATE COMMERCE COMMISSION has suspended from September 25 to April 25 the operation of tariff schedules published by agents for the transcontinental railroads proposing to cancel all joint through transcontinental class and commodity freight rates between Pacific coast points and certain intermediate territory and points in the state of Florida south of the line of the Seaboard Air Line from River Junction to Jacksonville. This would allow combinations of rates to apply which would result in increases.

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A Wabash Fast Freight Train in Illinois

RAILWAY AGE

Railway Officers

Executive

D. G. Conrad has been elected president of the Tuckerton, with headquarters at Tuckerton, N. J.

E. Z. Wallower has been appointed assistant receiver of the Southwestern Missouri, with headquarters at Webb City, Mo.

George A. Young has been elected vice-president of the Port Huron & Detroit, with headquarters at Port Huron, Mich., effective October 15.

J. H. Stanfiel, general manager of the Southern, Lines West, with headquarters at Cincinnati, O., has been appointed assistant to vice-president, with headquarters at Washington, D. C.

J. H. Walsh, general manager of the Quebec Central and president of the Temiscouata Railway, with headquarters at Sherbrooke, Que., has been elected vice-president of the Quebec Central. He will continue to serve as general manager, with the title of vice-president and general manager. Mr. Walsh was born on May 12, 1860, at

held. From September 1, 1901, until January, 1911, he was also vice-president of the Temiscouata, and since 1911 has served as president of this road.

Financial, Legal and Accounting

James E. Duffy, Jr., has been elected secretary and general attorney of the Port Huron & Detroit, with headquarters at Port Huron, Mich., effective October 15, succeeding **R. H. Neilson**, who has resigned to accept service with another company.

Operating

A. J. Smith, superintendent of the Ft. Wayne division of the Lake Erie and Western district of the New York, Chicago & St. Louis, with headquarters at Muncie, Ind., has been appointed assistant superintendent of the Sandusky and Ft. Wayne divisions of the same district, with headquarters as before at Muncie.

J. T. L. Brooks has been appointed trainmaster of the Pleasant Hill, Rich Hill, Granby and Madison districts of the Joplin division of the Missouri Pacific, with headquarters at Nevada, Mo., succeeding **J. K. Hobbs** who has been transferred to Pittsburg, Kan., with jurisdiction over the Pittsburg, Asbury and Fort Scott districts of the Joplin division.

H. C. Murphy, transportation assistant on the lines of the Chicago, Burlington & Quincy, West of the Missouri river, has been assigned to the staff of the general manager of the Lines East of the Missouri, to handle special matters and succeeding **S. L. Fee**, who has been appointed superintendent of the Centerville division, with headquarters at Centerville, Ia. Mister Fee succeeds **H. W. Hamm**, who has been retired at his own request after 45 years in the service of the Burlington. **H. J. Hoglund**, trainmaster on the Lines West, has been transferred to the Ottumwa division, with headquarters at Ottumwa, Ia.

C. H. Buford, assistant general manager of the Lines East of the Chicago, Milwaukee & St. Paul, with headquarters at Chicago, has been appointed acting general manager of the Lines West of Mobridge, with headquarters at Seattle, Wash., succeeding **C. O. Bradshaw**, who has requested and been granted a three months' leave of absence. **E. F. Rummel**, general superintendent of the Lines West, with headquarters at Butte, Mont., has been appointed assistant general manager of the Lines East, with headquarters at Chicago, replacing Mr. Buford.



J. H. Walsh

Quebec, and was educated at the Quebec Commercial Academy. He entered railway service in September, 1876, as a junior clerk in the contractor's office of the Quebec, Montreal, Ottawa & Occidental (now a part of the Canadian Pacific), and from 1879 until 1880, served as clerk in the freight and ticket office at Quebec. From 1880 until January 1, 1881, he was traveling auditor for the same road, and from January 1, until June 1, 1881, served as auditor of the Levis & Kennebec (now a part of the Quebec Central). Mr. Walsh then became auditor of the Quebec Central, which position he held until June, 1885, when he was appointed general freight and passenger agent of the same road. In January, 1906, he was appointed general manager of the same road, which position he has since

J. E. Gibault, who has been appointed superintendent of the Levis division of the Canadian National, with headquarters at Levis, Que., was born at St. Jerome, Terrebonne County, Canada, in 1887, and was educated at Mount St. Louis in Montreal and was graduated from the Polytechnical school with the



J. E. Gibault

degrees of Civil Engineer and Bachelor of Applied Science in 1910. Entering the railway service, Mr. Gibault had charge of construction work between Armstrong, B. C., and Cochrane, Ont., on the Transcontinental (now a part of the Canadian National), and later became divisional engineer successively at Cochrane, St. Maurice, Que., and Levis. In 1923, when Sir Henry Thornton established the Bureau of Economics, Mr. Gibault was appointed to that department in a technical capacity. During the past two years, he has been in charge of the railway course at the Polytechnical school at Montreal.

R. E. Simpson, general manager of the Southern, Lines East, with headquarters at Charlotte, N. C., has been transferred in the same capacity to the Lines West, with headquarters at Cincinnati, O., succeeding J. H. Stanfiel, promoted. **W. C. Hudson**, general superintendent of the Queen & Crescent district, at Chattanooga, Tenn., has been appointed general manager of the Lines East, with headquarters at Charlotte, N. C., succeeding Mr. Simpson. **J. C. Austin**, superintendent of the Birmingham division at Birmingham, Ala., has been appointed general superintendent at Chattanooga, succeeding Mr. Hudson. **J. T. Moon**, superintendent of the New Orleans & Northeastern (part of the Southern) at Hattiesburg, Miss., has been transferred to Macon, Ga., as superintendent of the Georgia, Southern & Florida (also a part of the Southern), succeeding J. W. Payne, who has been transferred as superintendent to the Birmingham division succeeding Mr. Austin. **B. F. Langford**, superintendent of the Mobile division at Selma, Ala., has been transferred in the same capacity to the New Orleans & Northeastern, succeeding Mr. Moon, and **Clark Hungerford** has been appointed superintendent of the Mobile

division at Selma, succeeding Mr. Langford.

Mechanical

M. A. Smith, who has been appointed superintendent of motive power of the Pittsburgh & Lake Erie and the Lake Erie & Eastern, with headquarters at Pittsburgh, Pa., was born in Norwalk, O., on September 7, 1872, and was educated in the public schools of Norwalk. He entered the service of the Wheeling & Lake Erie as a locomotive fireman on August 29, 1890, and was advanced to locomotive engineer in 1896. Mr. Smith left the service of the Wheeling & Lake Erie in 1899, and in March, 1900, entered the service of the Pittsburgh & Lake Erie as a locomotive inspector, serving in that capacity until June, 1901. From the latter date until November, 1902, he was traveling fireman, and then served as enginehouse foreman until June, 1904. Mr. Smith then became general foreman at the Glassport shops, which position he held



M. A. Smith

until December, 1912, when he was transferred in the same capacity to the East Youngstown shops, where he remained until September, 1917. From September, 1917, until June, 1923, he served as trainmaster, and then became assistant superintendent of motive power, which position he was holding at the time of his recent appointment.

Karl Berg, who has been appointed assistant superintendent of motive power of the Pittsburgh & Lake Erie and the Lake Erie & Eastern, with headquarters at McKees Rocks, Pa., was born in Sweden in December, 1881. He was educated in the public schools of Sweden and attended the New York Central apprentice school while serving as an apprentice, and after completing the apprentice course, continued until 1913, studying mechanical engineering in the evening classes of the School of Applied Science, Carnegie Institute of Technology at Pittsburgh. He entered the service of the Pittsburgh & Lake Erie at the McKees Rocks shops as a machinist helper in May, 1903, and became machinist apprentice in May, 1904. He completed his apprenticeship in May,

1908, and at that time was appointed mechanical draftsman in the mechanical engineer's office at Pittsburgh. In November, 1909, Mr. Berg accepted a position with the H. K. Porter Locomotive Company at Pittsburgh as a locomotive designer, which position he held until July, 1911, when he returned to the



Karl Berg

service of the Pittsburgh & Lake Erie, serving for a time in the mechanical engineer's office. He was later advanced to chief draftsman, and in June, 1917, became mechanical engineer. In September, 1920, he was appointed shop superintendent at the McKees Rocks shops, which position he was holding at the time of his recent appointment.

David J. Redding, who has retired as superintendent of motive power of the Pittsburgh & Lake Erie and the Lake Erie & Eastern, with headquarters at Pittsburgh, Pa., was born in Vincennes, Ind., on April 21, 1865, and



D. J. Redding

was educated in the Norwalk, Ohio, schools. He entered the service of the Lake Shore & Michigan Southern (now a part of the New York Central) as a machinist apprentice at the Norwalk shops in March, 1881, and continued with that company until April, 1888, when he entered the service of the Pittsburgh & Lake Erie as a machinist at the McKees Rocks shops. In June,

1888, he was advanced to gang foreman at the same place, and in June, 1893, was again advanced to the position of general foreman at Dickerson Run, Pa. In November, 1899, Mr. Redding became general foreman at McKees Rocks, and in December of the same year was appointed master mechanic, with the same headquarters. In December, 1909, he was appointed assistant superintendent of motive power and served in that capacity until June, 1923, when he was appointed superintendent of motive power. This position he was holding at the time of his retirement, due to ill health.

Ralph W. Anderson, superintendent of motive power of the Eastern lines of the Chicago, Milwaukee & St. Paul, with headquarters at Milwaukee, Wis., has been promoted to superintendent of motive power of the entire system, with headquarters at the same point. **H. W. Williams**, superintendent of motive power of the Western lines, has been appointed assistant superintendent of motive power of the Western lines, with headquarters as before at Tacoma, Wash. The title of **K. F. Nystrom**, master car builder with headquarters at Milwaukee, has been changed to superintendent of the car department of the entire system and the title of master car builder has been discontinued. The titles of **J. A. Deppe** and **F. D. Campbell**, assistant master car builders with headquarters at Milwaukee and Tacoma, respectively, have been changed to assistant superintendents of the car department and the titles of assistant master car builders have been discontinued.

Traffic

E. J. Fenchurch, general freight and passenger agent of the Southern Pacific, with headquarters at Tucson, Ariz., has been placed in charge of an office at Phoenix, Ariz., and will divide his time between the two points.

Stephen T. Stackpole, general freight agent of the Pennsylvania, with headquarters at Detroit, Mich., has been appointed general agent, with the same headquarters, effective October 1, succeeding **T. H. Roberts**, deceased.

S. C. Frost, general agent of the Union Pacific at Ocean Park, Cal., has been transferred to Santa Monica, Cal., effective October 1. **R. E. Drummy** has been appointed general agent of the Union Pacific at Santa Ana, Cal.

Quincy A. Kellogg, traveling representative of the Southwestern Commission Company, Denver, Colo., has been appointed general live stock agent of the Denver & Rio Grande Western, with headquarters at the same point.

R. H. Schultz, assistant general freight agent of the International-Great Northern and the Gulf Coast Lines, with headquarters at Houston, Tex., has been appointed traffic manager of the Wichita Falls and Southern, with headquarters at Wichita Falls, Tex.

H. G. Glaiber has been appointed assistant general freight agent of the Seaboard Air Line, with headquarters at Savannah, Ga., succeeding **R. W. Daniel**, deceased. **F. P. Medford, Jr.**, has been appointed district freight and passenger agent, with headquarters at Fort Lauderdale, Fla. **J. T. Carter** has been appointed district freight agent, with headquarters at Savannah, and the position of commercial agent has now been abolished.

W. F. Watterson, division freight agent on the New York, Chicago & St. Louis, at Buffalo, N. Y., has been promoted to assistant general freight agent, with headquarters at the same point, and the office of division freight agent at Buffalo has been abolished. **J. J. Wheately** and **A. L. Gilmore**, district traffic agents of the Nickel Plate district, at Cincinnati, Ohio, and Columbus respectively, have been promoted to general agents, with the same headquarters and with jurisdiction extended to cover the entire system. The jurisdiction of **J. E. Rheiner**, general agent of the Nickel Plate district at Toledo, Ohio, has also been extended to cover the entire system.

Purchases and Stores

G. A. Goerner, storekeeper of the Chicago, Burlington & Quincy, with headquarters at Aurora, Ill., has been promoted to traveling storekeeper, with headquarters at Chicago, succeeding **H. R. Duncan**, lately promoted to superintendent of timber preservation. **John Maier**, storekeeper at Galesburg, Ill., has been transferred to Aurora, succeeding Mr. Goerner, and **R. E. Kelly**, storekeeper at West Burlington, Iowa, has been transferred to replace Mr. Maier at Galesburg. **A. G. Swanson**, general piece work inspector, with headquarters at Chicago, has been appointed storekeeper at West Burlington, succeeding Mr. Kelly.

Obituary

George H. Kummer, general coal agent of the Chicago & Eastern Illinois, with headquarters at Chicago, died in that city on September 23.

Joseph C. Schepp, master mechanic on the Texas & Pacific, with headquarters at Texarkana, Tex., from 1914 to 1917, died at Ft. Wayne, Ind., on September 26. Prior to 1914 he had been general foreman of shops of the T. & P. at Marshall, Tex.

Edward Turner Jeffery, former president and chairman of the board of directors of the Denver & Rio Grande and the Western Pacific who retired in 1917, died in New York on September 24 after a three days' illness from heart trouble. Born in Liverpool, Eng., on April 6, 1843, Mr. Jeffery entered railway service in October, 1856, at the age of 13 years, as an office boy for the superintendent of machinery of the

Illinois Central at Chicago. From December of the same year until February, 1871, Mr. Jeffery served successively as an apprentice in the Chicago shops, as an office boy, as an apprentice in the office of the mechanical draftsman, as a mechanical draftsman and as secretary to the superintendent of machinery. He was then promoted to assistant superintendent of machinery, becoming general superintendent and chief engineer of the Illinois Central on May 4, 1877. Eight years later Mr. Jeffery was promoted to general manager, leaving railway service for three years in 1889 to become commissioner to the Paris exposition and later chairman of the grounds and buildings committee of the



E. T. Jeffery

Chicago exposition. In October, 1891, he was elected president of the Denver & Rio Grande (now the Denver & Rio Grande Western), serving until January, 1912, in that capacity and for nine years also as general manager, as receiver and then president of the Rio Grande Southern, as president of the Rio Grande Western (now a part of the D. & R. G. W.) and as president of the Western Pacific. His tenure as president of the Western Pacific extended from June, 1905, to July, 1913, when he was elected chairman of the board of directors. In January, 1912, Mr. Jeffery relinquished the presidency of the D. & R. G. to become chairman of the board of directors, a position he held along with the chairmanship of the board of the W. P. until his retirement in January, 1917. Since 1917, Mr. Jeffery has confined his business activity to service as director of a number of banking corporations and the Manhattan Railway Company, New York, maintaining his residence in New York.

COMBINED ENGINE COALER AND CINDER PLANT.—Bulletin No. 96, issued by the Roberts & Schaefer Company, Chicago, describes and illustrates the "N & W" type combined engine coaler and cinder plant, in which the two units may be operated separately or jointly as desired. Views are given of actual installations and the bulletin contains a general plan as well as sectional plans of the units.